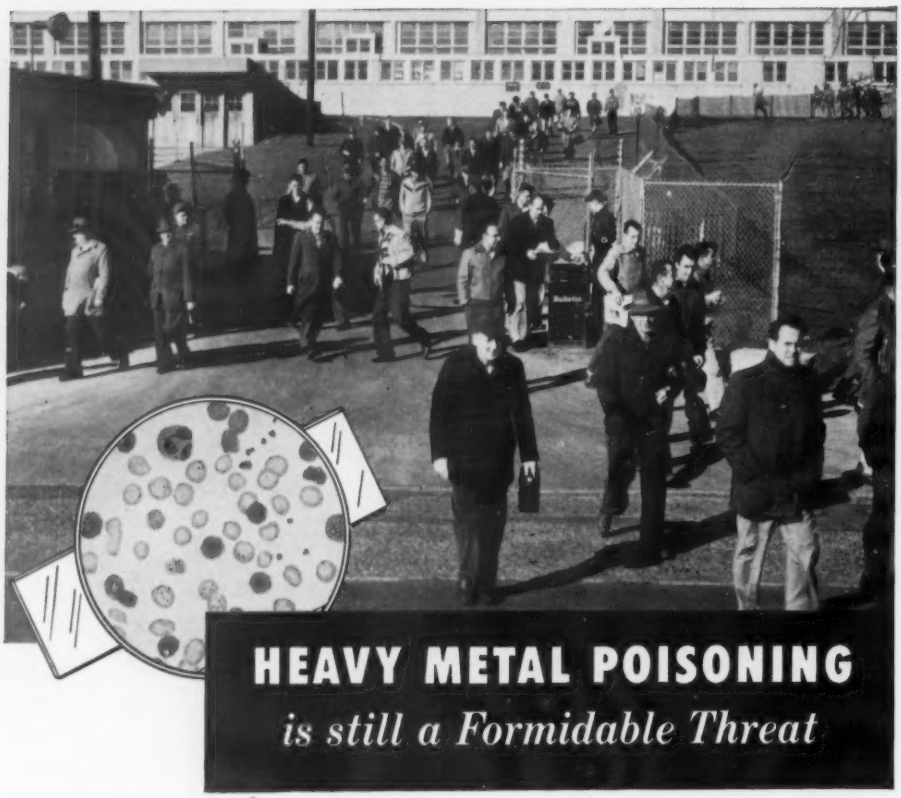
INDUSTRIAL MEDICINE *and* SURGERY

Established 1932

AUGUST 1959

Volume 28 Number 8



HEAVY METAL POISONING
is still a Formidable Threat

...but now Calcium Disodium VERSENATE provides a dependably effective means of removing lead and other heavy metals from the body...and *without danger of organ damage.* Calcium Disodium VERSENATE is available in both oral and intravenous preparations; the intravenous form for safe, effective, dramatic short-term treatment; the oral form for convenient prevention of exacerbations or as sole therapy for milder types of lead poisoning.

NOW IN 2 DOSAGE FORMS

INTRAVENOUS—Complete instructions for dilution and administration accompany the ampuls. The average daily dose for an adult is 1 to 2 Gm. per day, given as two infusions. For children, the dose is not more than 0.5 Gm. per 35 pounds of body weight, given once or twice daily. Boxes of six 5 cc. (1 Gm.) ampuls.

ORAL—Average adult dose is 8 tablets (4 Gm.) per day, in divided doses. For children, the dose is adjusted on the basis of 2 tablets (1 Gm.) per 35 pounds of body weight daily, in divided doses. For ease of administration tablets may be crushed and dissolved in milk. In bottles of 250 tablets, each containing 500 mg.

Write for descriptive literature.

Calcium Disodium **VERSENATE***

spells the answer

*Trademark of Dow Chemical Co.

Riker NORTHRIDGE, CALIFORNIA

now... a new way to relieve pain and stiffness in muscles and joints

- Exhibits unusual analgesic properties, different from those of any other drug
- Specific and superior for relief of SOMAtic pain
- Modifies central perception of pain without abolishing natural defense reflexes
- Relaxes abnormal tension of skeletal muscle

SOMA™

N-isopropyl-2-methyl-2-propyl-1, 3-propanediol dicarbamate

In back pain, bursitis, sprains, strains, and bruises, whiplash and other traumatic injuries, inflammatory and degenerative muscle and joint complaints.

Many patients report they feel better and sleep better with SOMA than with any previously used analgesic or relaxant drug.

SOMA often makes possible reduction or elimination of steroids, salicylates, sedatives and narcotics.

RAPID ACTING. Pain-relieving and relaxant effects start within 30 minutes and last for at least 6 hours.

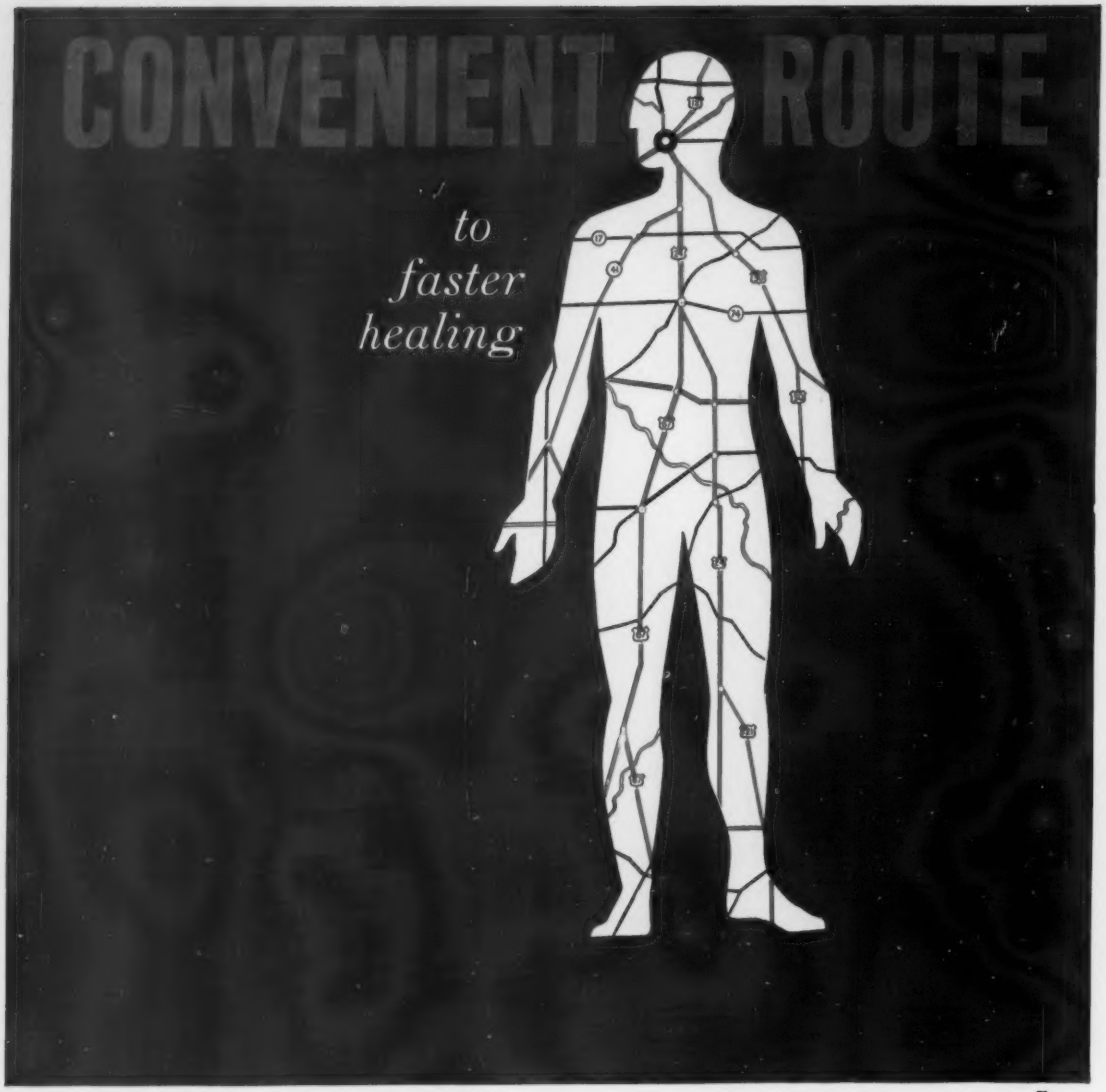
NOTABLY SAFE. Toxicity is extremely low. No effects on liver, endocrine system, blood pressure, blood picture or urine have been reported. Some patients may become sleepy on higher than recommended dosage.

EASY TO USE. Usual adult dose is one 350 mg. tablet 3 times daily and at bedtime.

SUPPLIED: Bottles of 50 white sugar-coated 350 mg. tablets.

Literature and samples on request.

WALLACE LABORATORIES, NEW BRUNSWICK, N. J.



NEW: CHYMAR® Buccal

controls inflammation, swelling and pain... Chymar Buccal tablets release chymotrypsin directly into the blood stream through the buccal mucosa exerting a powerful anti-inflammatory effect through systemic action. Used prophylactically or therapeutically in hemorrhoidectomies, biopsies, cellulitis, mammectomies, and plastic surgery, the tablets prevent or reduce inflammatory tissue reactions, edema and hematoma. Chymar Buccal has been found to provide gratifying relief from pain in post-tonsillectomies and is unusually effective for prevention or reduction of testicular and cord swelling in hernia repairs. *Chymar Buccal may be used as the sole anti-inflammatory agent in many conditions. In more severe cases, the vigorous anti-inflammatory response obtained with injectable Chymar—Aqueous or in Oil—can be satisfactorily maintained with Chymar Buccal Tablets.*

CHYMAR *THE SUPERIOR ANTI-INFLAMMATORY ENZYME*

ARMOUR PHARMACEUTICAL COMPANY • KANKAKEE, ILLINOIS/*Armour Means Protection*

INDUSTRIAL MEDICINE and SURGERY

ESTABLISHED 1932

The International Journal of Medicine in Industry

AUGUST, 1959
VOLUME XXVIII
NUMBER 8

CONTENTS

Psychiatric Aspects of Surgery 351
H. H. Garner, M.D.

Symptomatic Treatment for Upper Respiratory Infections 362
Robert E. Steller, M.D., Edgar A. DeMar, M.D., Francis R. Schwartz, M.D.

Experimental Thermal Burns 364
B. Rovatti, M.D. and R. J. Brennan, M.D.

Newer Hazards from Radiation 369
Willard Machle, M.D.

Mental Health in Industry 373
The Fifth Annual Lake Logan Conference

Occupational Health Services in Small Businesses 377
Harold J. Magnuson, M.D.

Profiles in Occupational Health — Clarence D. Selby, M.D. 381

Medically Irrelevant 389

Letters, Books 389

Editorial: Pilfering in Industry 392

Personal News & Notes 4, 6, 8

Comment and Opinion 37

Index of Advertisers 40

INDUSTRIAL MEDICINE AND SURGERY, The Journal of Medicine in Industry (with which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"): Entered as second class matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Reentered, October 3, 1949. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Miami, Florida. STEPHEN G. HALOS, Chairman; STEPHEN F. HALOS, President; HAROLD A. HOOPER, Treasurer; CAREY P. McCORD, M.D., Editor; JOHN A. LAWRENCE, Managing Editor; A. D. CLOUD, Editorial Consultant; LUCILLE H. GROSS, Circulation Manager; T. W. PINKARD, Production Manager. EXECUTIVE OFFICES, 400 S.W. 69th Avenue, Miami 44, Florida. PUBLICATION, EDITORIAL AND CIRCULATION matters should be addressed to P. O. Box 44-306, Miami 44, Florida.

Subscriptions in United States $6.00 per year, $10.00 for 2 years; in Canada $8.00 per year, $14.00 for 2 years; in other countries $12.00 (U.S. Currency) per year, $20.00 for 2 years. Single copies $1.25. Title Registered in United States Patent Office. Registered Canada, 1942. Copyright, 1959, by INDUSTRIAL MEDICINE PUBLISHING COMPANY. CHANGE OF ADDRESS: Five weeks' notice required; changes cannot be made without old address as well as new; please furnish zone number for new address if city requires it.

PERSONAL NEWS AND NOTES

IRVIN KLEIN, M.D., was appointed in June as Medical Director of the New York State Workmen's Compensation Board. He has been an Associate Examining Physician of the Board since 1942. He succeeds WILLIS M. WEEDEN, M.D.

In his new capacity DR. KLEIN will be head of a staff of 51 physicians throughout the state whose responsibilities include the examination of injured workmen who are claimants under the Workmen's Compensation Law in order to ascertain medically the extent and effect of the injuries.

DR. KLEIN completed his undergraduate studies at George Washington University and received his medical degree from New York Medical College in 1933. He has been an instructor in medicine there since 1935.

He served his internship at Coney Island Hospital from 1933 to 1935 and was admitting physician at Cumberland Hospital until 1936, when he went to Metropolitan Hospital as attending physician in Cardiology, where he remained until 1948. He also has served as Cardiologist in the Outpatient Department of Flower-Fifth Avenue and Metropolitan Hospitals.

In addition, he was a member of the Work Classification Unit, Cardiac Clinic, Bellevue Hospital, from 1950 to 1956; and since then has been a member of the similar unit at Beekman Hospital. He is a Director of the New York State Heart Assembly, and a member of its Executive Committee and Chairman of its Rehabilitation Committee. He also is Chairman of the subcommittee on Medical-Legal and Insurance of the Rehabilitation Committee of the American Heart Association and is a member of the Committee on Cardiovascular Disease in Industry of the New York Heart Association.

He is a Fellow of the Industrial Medical Association, of the American College of Cardiology, of the American Geriatric Society, of the American Academy of Compensation Medicine and of the American College of Chest Physicians, in which he also is a member of the Rehabilitation Committee. He is a member of the Special Committee on Industrial Medicine of the Medical Society of the County of New York. He also is a member of the Medical Society of the State of New York and of the American Medical Association.

He is a member of the Advisory Committee to a Federal study of employer practices and policies in hiring the handicapped. He was a member of the First Wisconsin Conference on Work and the Heart, held in 1957.

DR. KLEIN is a contributing author to the *Encyclopedia of Cardiology*, to be published by the American College of Cardiology, and has written a number of articles for professional journals treating with the prevention and treatment of cardiac disability and the rehabilitation and employment of those whom it strikes.

New York University Post-Graduate Medical School will present Occupational Medicine, a full-time course for practicing physicians, to be given for eight weeks from September 14 through November 6, 1959.

The course content covers the following areas: Preventive Medicine, including epidemiology and biostatistics, Administrative Medicine, Occupational Diseases and Industrial Hygiene. It is aimed at meeting the need for specialized training in industrial medicine. Didactic instruction will be supplemented with field trips to industrial plants, governmental agencies concerned with industrial health and to union health centers. Opportunity will be given to attend medical, surgical and clinical-pathological conferences held in the New York University-Bellevue Medical Center.

For further information write: Office of the Associate Dean, NYU Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

New York University Post-Graduate Medical School announces a part-time course, Occupational Health for Physicians, to be given on Thursdays, 1:30 to 4:30 p.m., from September 17, 1959 to May 13, 1960.

★ AMERICAN ASSOCIATION OF RAILWAY SURGEONS ★

Officers

President:
J. S. BELL, M.D., York, Nebraska.
President-Elect:
WALTER D. ABBOTT, M.D., Des Moines, Iowa.
Vice Presidents:
WILLIAM C. BECK, M.D., Sayre, Pennsylvania.
FUNSTON J. ECKDALL, M.D., Emporia, Kansas.
LAWRENCE W. LONG, M.D., Jackson, Miss.
Recorder:
JAMES K. STACK, M.D., Chicago.
Treasurer:
T. L. HANSEN, M.D., 139 West Van Buren, Chicago 5, Wabash 2-3200, Ext. 220.

Executive Board

ARTHUR R. METZ, M.D., Chairman, Chicago.
ERNEST C. OLSON, M.D., Chicago.
ROBERT M. GRAHAM, M.D., Chicago.
R. B. KEPNER, M.D., Chicago.
A. M. W. HURSH, M.D., Philadelphia.
R. WESTLINE, M.D., Chicago.
RAYMOND HOUSEHOLDER, M.D., Chicago.
J. M. L. JENSEN, M.D., Chicago.
J. R. WINSTON, M.D., Temple, Texas.
Secretary:
CHESTER C. GUY, M.D., 5800 Stony Island Avenue, Chicago 37, Midway 3-9200.

Even with colds

heads crystal clear

on the job . . .

with new long-acting[1, 2, 3]

Rynatan®

Keeps heads clear 10-12 hours

with a single oral dose

with remarkable lack of

side effects[1, 2]

DURABOND oral repository

DURABOND A new principle in medicine that controls absorption rather than dissolution or release, independently of gastrointestinal motility or specific pH. Maintains constant rather than sporadic blood levels, hence no over-release or under-release. This gives smooth therapeutic results, rare incidence of side effects.

RYNATAN TABULES for adults and older children

Rynatan contains:	**Each tabule**
Phenylephrine tannate	25.0 mg.
Prophenpyridamine tannate	37.5 mg.
Pyrilamine tannate	37.5 mg.

Dose: Tabules 1-2, every 12 hours . . . before work and at bedtime.

Neisler **IRWIN, NEISLER & CO.**
DECATUR, ILLINOIS

Available in Canada through
Lakeside Laboratories (Canada) Ltd., Toronto

Reduce absenteeism and inefficiency due to miseries of a cold, with Rynatan . . .

The first long-acting, oral, nasal and sinus decongestant—almost completely free from drowsiness and other side effects: ". . . of 311 patients, incidence of side effects was only 2.2 per cent. Evidence of sedation was (only) 1.2 per cent."[4]

Chemically and physically different. Employs no layers, enteric coatings, pellets, waxes or resins. Sustained action is built right into the molecule—with the Durabond principle.

1. Lawler, E.G. and Limperis, N. M.: Clin. Med. (Dec.) 1958. 2. Medical Science 3:376-377 (Mar 25) 1958. 3. Cavallito, C.J. and Jewell, R.: J. Am. Pharm. A. (Scient. Ed.) 47:165-168, 1958. 4. Antibiotic Med. & Clin. Therapy 5:578-581 (Sept.) 1958.

FOR TRIAL IN YOUR OWN PLANT

Send for samples, clinical reprints and industrial prices

IRWIN, NEISLER & CO.
INDUSTRIAL DIVISION—BOX 1110
DECATUR, ILLINOIS

Send information requested below:

_____ Samples and clinical reprints
_____ Industrial packaging and prices

Your Name_____ M.D.

Company_____

Plant Address_____

City_____ Zone____ State_____

This course constitutes an intensive survey of the field of occupational health and is designed to meet the requirements of those physicians unable to take the full-time program.

The weekly course is accessible to those within one to two hours travel of New York City. The curriculum will be a condensate of the two months program. Conference and library facilities of the Medical Center will be available to registrants.

For further information and applications write: Associate Dean, New York University Post-Graduate Medical School, 550 First Avenue, New York 16.

HARRY E. UNGERLEIDER, M.D., a leading cardiologist, was recently appointed as Consulting Medical Director of North American Reassurance Company.

In his new position, DR. UNGERLEIDER will consult in all sectors of the country with medical officers of underwriting companies which reinsure a portion of their policies with North American Reassurance Company.

Prior to joining North American Reassurance, DR. UNGERLEIDER since 1947 had been Medical Director of Research of The Equitable Life Assurance Society of the United States. He became associated with Equitable in 1929 as Assistant Medical Director.

A native of Philadelphia, DR. UNGERLEIDER received his M.D. degree at the Medico Chirurgical College there in 1916. During the next four years, he interned at Philadelphia General Hospital, and, as a major in the United States Army Medical Corps, served in France.

He was named an instructor at the Temple University School of Medicine in 1920, and two years later he became Medical Director of Eastern State Penitentiary in Philadelphia. He served as Assistant Physician at Polyclinic and Methodist Hospital from 1925 until he joined Equitable Life Assurance Society as Assistant Medical Director in 1929.

Formerly chairman of the board of Life Insurance Medicine, DR. UNGERLEIDER is also a former director of the National Health Council, a Diplomate of the American Board of Internal Medicine, with a subspecialty in cardiovascular diseases; a Fellow of the American Association for the Advancement of Science, and an Honorary Fellow of the Cardiological Society of Brazil. A member of the American Heart Association, he has been on its board of directors since 1942, was its secretary from 1947 until 1948, and received its award of merit in 1956.

DR. UNGERLEIDER holds membership in the Association of Life Insurance Medical Directors, was editor of its journal, *Transactions*, from 1937 until 1947, and served as its Second Vice President in 1947, First Vice President in 1948 and President in 1949. He is a member and former President of the Society of Ex-Residents and Physicians of Philadelphia General Hospital.

Associate editor of *Geriatrics*, DR. UNGERLEIDER is also a member of the National Heart Bulletin's advisory editorial board. He has written sections on roentgenology of the heart in several text books and has contributed numerous articles on heart diseases to scientific journals in the United States and South America.

DR. UNGERLEIDER is also a member of the American Medical Association, New York County Medical Society, American Life Convention, Life Insurance Medical Research Fund, Academy of Medicine, American Society for the Study of Arteriosclerosis, American Therapeutic Society, American Public Health Association, Health Insurance Council, Industrial Medical Association, Harvey Society and New York State Medical Society.

New York University-Bellevue Medical Center Post-Graduate Medical School, Department of Industrial Medicine, offers five courses in radiological health starting October, 1959.

This program makes available to research institutions, industry and government, facilities for training technical people having responsibilities in the expanding field of radiological protection. The courses are intended for persons already trained in one of the physical, engineering, biological or medical sciences who require a comprehensive introduction to the new techniques and methods associated with radiological hazard evaluation. The courses are as follows:

Introduction to Radiological Health: Full time, October 12-23, 1959; for persons having responsibilities connected with the health and safety of personnel in installations using sources of ionizing radiation.

Radiological Health Laboratory: Full time, October 26-November 6, 1959. A series of experiments designed to furnish a familiarity with the most important categories of nuclear detection apparatus and techniques of measurement.

Radiochemical Analysis: A two-week intensive course, November 9-20, 1959, covering the techniques of radiochemistry and counting required for the determination of radioisotopes in biological and environmental samples.

Medical and Public Health Control of Ionizing Radiation: Full time, March 7-18, 1960. Primary emphasis is on the biological effects of radiation and medical control programs. Specifically designed for public health officials, physicians and others with biological interests.

Radiation Hygiene Measurements: A four-week intensive course, April 18 through May 13, 1960, offering laboratory instruction in surveying, monitoring and sampling procedures for persons having some acquaintance with nuclear measurement principles.

For further information: The Associate Dean, New York University Post-Graduate Medical School, 550 First Avenue, New York 16, N. Y.

FRANK E. LEDER, M.D., F.A.C.P.M., Associate A.C.P.F. Industrial-Medical, Principal Medical Examiner of Workmen's Compensation Board of State of New York, has been appointed to the consultant staffs of Holy Family, St. Peters and Columbus Hospitals in Occupational and Industrial Medicine and to attending staff (associate) in Physical Medicine and Rehabilitation at St. Vincent's Hospital, New York. He is a Diplomate of the American Board of Occupational Medicine and a Fellow of the Industrial Medical Association.

you can expect your patients with low back pain to return to normal activity when you prescribe

Trancopal

case profile no. 2758

A middle-aged man had intermittent low back pain that he attributed to injuries received in an automobile accident three years previously. The pain radiated down both legs, making the patient walk bent over. He also had difficulty getting out of bed and had to pull his knees up and roll out. Any heavy lifting precipitated a new attack, and he tired easily.

Findings on x-ray of the thoracic and lumbar spine gave negative results. Findings from other laboratory studies were within normal limits. A herniated disc, although still a possibility, was temporarily ruled out by the neurologic examination. Previous treatment consisted of analgesics and steroids (without success), and narcotics were given during severe attacks.

Receiving a dosage of Trancopal, 100 mg., three times a day, this patient is able to walk almost normally and carry on his regular activities as long as he does not overexercise. He has been taking Trancopal over seven months with excellent relief of symptoms. No side effects have occurred. *Clinical Report on file at the Department of Medical Research, Winthrop Laboratories.*

INDICATIONS: Musculoskeletal: Low back pain (lumbago, sacroiliac pain); neck pain (torticollis, etc.); bursitis; rheumatoid arthritis; osteoarthritis; disc syndrome; fibrositis; ankle sprain; tennis elbow; myositis; postoperative muscle spasm.

Psychogenic: Anxiety and tension states; dysmenorrhea; premenstrual tension; asthma; angina pectoris; alcoholism.

Dosage: 100 to 200 mg. orally three or four times daily. Relief of symptoms occurs in fifteen to thirty minutes and lasts from four to six hours.

Supplied: Trancopal Caplets® 100 mg. (peach colored, scored), bottles of 100.

Trancopal®

the first true TRANQUILAXANT

Winthrop LABORATORIES • New York 18, New York

1393M

Trancopal (brand of chlormezanone) and Caplets, trademarks reg. U.S. Pat. Off.

American Association of Industrial Dentists has announced the following officers for 1959-1960: President, Guy C. Kirby, D.M.D., Dental Director, Pratt and Whitney Aircraft, East Hartford, Connecticut; President-Elect, Robert B. Nemeroff, D.D.S., 475 Fifth Avenue, New York 17, New York; Vice-President, Lyon P. Strean, Ph.D., D.D.S., Merck, Sharp & Dohme, West Point, Pennsylvania; and Secretary-Treasurer, Edward R. Aston, D.D.S., Industrial Dental Consultant, Pennsylvania Department of Health, P.O. Box 90, Harrisburg, Pennsylvania.

Newly appointed directors are: Chairman, Kenneth W. Misher, D.D.S., Dental Director, 185 North Wabash Avenue, Chicago, Illinois; 1960, Calvin Weiss, D.D.S., Labor Health Institute, St. Louis, Missouri, and Robert I. Humphrey, D.D.S., 185 North Wabash Avenue, Chicago, Illinois; 1961, Frances R. Karlan, D.D.S., Metropolitan Life Insurance Company, New York, New York; and 1962, Grant U. MacKenzie, D.D.S., Ford Motor Company, Dearborn, Michigan.

University of California Extension course in Development and Principles of Industrial Nursing will start September 10, 1959, at the Los Angeles City Health Building, and will include an analysis of the nurse's role in industrial in-plant health services.

Two courses will start September 22 at the Extension Center: Management Practices in Hospital Administration, with special emphasis on the exceptional management problems found only in hospitals, and an analysis of personnel relationships; and Industrial Health, a survey of the field, with discussions of occupational diseases and hazards and plant medical services.

Information and applications for all courses and workshops may be obtained through Medical Extension, UCLA Medical Center, Los Angeles 24, California.

MARGARET L. STEELE, R.N., was elected President of the American Association of Industrial Nurses at the 17th Annual Business Meeting held in Chicago, Illinois, April 29, 1959.

For the past 10 years MRS. STEELE has been Superintendent of Nurses in the St. Louis office of the American Brake Shoe Company, whose headquarters office is in New York City. She also served as plant nurse for the American Brake Shoe Company, and as a Public Health nurse in Rockport, Mass.

A graduate of the Peter Bent Brigham Hospital School of Nursing, MRS. STEELE received her B.S. from Simmons College School of Nursing in Boston.

She was former President of the St. Louis Industrial Nurses Association, and a member of various professional organizations.

BERNERD H. BURBANK, M.D., has joined the McGraw-Hill Publishing Company as Medical Director.

He is a graduate of Colby College, Waterville, Maine, and received his M.D. from Temple University, Philadelphia. For the past 3½ years, he has been Assistant Clinical Director of Socony-Mobil Oil Co., Inc., New York City.

From 1944 to 1946, DR. BURBANK served as a battalion surgeon in the Army, and saw duty in the European theater; he held the rank of major. He was in private practice in Portland, Maine, from 1947 to 1955.

He is on the teaching staff of Cornell University Medical School and is on the attending staff at New York Hospital-Cornell Medical Center.

He is a member of the American Medical Association, New York State and County Medical Societies and the Industrial Medical Association.

FREDERICK H. SHILLITO, M.D., an Associate Professor at the University of Michigan and a member of the staff of the Institute of Industrial Health of the University, has been granted leave of absence to return to a post in the medical department of the American Can Company in New York City.

J. R. REID JR., M.D., a retired captain in the U. S. Navy, has begun work at the Fort Mill and White plants of the Springs Cotton Mills in Fort Mill as Director of Industrial Medicine for those plants. DR. REID was graduated from Clemson College and the Medical College of South Carolina.

He served as medical officer in the U. S. Navy from 1930 until 1958.

Prior to coming to the Springs Cotton Mills, DR. REID was director of the Division of Industrial Hygiene of the Florida State Board of Health in Jacksonville, Fla.

—*Rock Hill* (S. C.) *Herald*, June 15, 1959.

DAVID L. AVNER, M.D., has accepted the position of Mine Physician for the Vesta-Shannopin Coal Division of the Jones Laughlin Steel Corporation.

As Mine Physician, DR. AVNER will direct the medical activities of the area mines operated by J. & L. involving routine accidents and general health of the miners. A new venture in a health program, for the benefit of the employees of the mines, is reported to be forthcoming.

DR. AVNER has practiced medicine in the Greensboro area, for nearly 20 years.

He was graduated from the University of North Carolina, with an A.B. Degree, attended Medical School at the University of North Carolina and Rush Medical College, University of Chicago. He came to Greensboro shortly after completing his internship at South Side Hospital, Pittsburgh.

For the past nine years, DR. AVNER has attended Graduate Institute Courses, which were held under the auspices of the Pennsylvania Medical Society and American Academy of General Practice.

—*Point Marion* (Pa.) *News*, May 21, 1959.

THOMAS L. PRITCHETT, JR., M.D., has been appointed plant physician to Ford Motor Company's Sheffield, Alabama, division. He succeeds JAMES CADEN, M.D., who has resigned. DR. PRITCHETT has a B.S. degree from the University of Georgia, and M.D. degree from the University of Georgia School of Medicine (1945) and in 1958 received his American Board of Surgery Eligibility from Vanderbilt University Hospital. He will maintain a private practice in addition to his duties at Ford.

KILLS THEM ALL

In Topical Infections, regardless of etiology, BETADINE OINTMENT destroys all pathogens present. BETADINE OINTMENT, a single topical agent, is a full-range pathogenicide—kills bacteria, fungi, protozoa, yeasts, and viruses on contact. Yet it is nonsensitizing, nonirritating, and nontoxic to normal skin tissue.

BETADINE OINTMENT • topical pathogenicide • fully effective against resistant strains • destroys gram-positive and gram-negative organisms • kills fungi, protozoa, yeasts, viruses • no development of resistant strains on prolonged use • provides protective barrier against invading pathogens • nonsensitizing . . . relieves pain • color indicates germicidal protection • applies easily . . . may be bandaged.

indications: primary and secondary skin infections including pyoderma, mycotic and bacterial infections, eczema, furunculosis, minor burns, as well as staph. aureus and pseudomonas infections.

administration: apply liberally over affected area as often as needed, bandage if desired.

supplied: one ounce tube.

BETADINE™ OINTMENT

(CONTAINS POVIDONE-IODINE)

TOPICAL PATHOGENICIDE ... KILLS PATHOGENS ON CONTACT

established in 1905 TAILBY-NASON COMPANY, INC., DOVER, DELAWARE

Spray on rapid and profound relief of pain...

1st, 2nd and 3rd degree burns, cuts, lacerations and abrasions . . .

ONLY
AMERICAINE (Aerosol, Ointment and Liquid) contains 20% dissolved benzocaine—MOST POTENT*—LEAST TOXIC* of topical anesthetics.
*References on request
Americaine
AEROSOL

Americaine® AEROSOL

"By stopping the pain, shock apparently is eliminated or minimized."[1] Every plant should have Americaine Aerosol for emergency use.

- **relieves pain in 2-3 minutes . . . lasts 4-6 hours**
- **easy to apply . . . covers large areas quickly**
- **water-soluble, bacteriostatic, sanitary**
- **excellent for pre-debridement of abrasions, etc.**
- **no sensitivity in over 12,600 published cases**

1. Kuba, E. F.: First Stage Treatment of Burns and Prevention of Shock, Indust. Med. 12:369-371 (Aug.) 1958.

Send for literature . . .

ARNAR-STONE LABORATORIES, INC./ Mt. Prospect, Illinois

even if your patient is a mud chicken†

†surveyor, to non-engineers

he won't be mired for long once he's on

PARAFON*

PARAFLEX® + TYLENOL®

for muscle relaxation *plus* analgesia

prescribe PARAFON in low back pain —sprains—strains—rheumatic pains

Each PARAFON tablet contains:
PARAFLEX® Chlorzoxazone‡ . . 125 mg.
Specific for skeletal muscle spasm
TYLENOL® Acetaminophen . . 300 mg.
The analgesic preferred in musculoskeletal pain

Supplied: Tablets, scored, pink, bottles of 50.

Dosage: Two tablets three or four times a day.

and in arthritis

PARAFON*
with Prednisolone

Each PARAFON WITH PREDNISOLONE tablet contains: PARAFLEX® Chlorzoxazone‡ 125 mg., TYLENOL® Acetaminophen 300 mg., and prednisolone 1.0 mg.

Supplied: Tablets, scored, buff colored, bottles of 36.

Dosage: One to two tablets three or four times a day.

Precautions: The precautions and contraindications that apply to all steroids should be kept in mind when prescribing PARAFON WITH PREDNISOLONE.

McNEIL

McNeil Laboratories, Inc • Philadelphia 32, Pa.

*Trade-mark ‡U. S. Patent Pending

more than tetracycline alone

MYSTECLIN-V CONTAINS TETRACYCLINE PHOSPHATE COMPLEX FOR A DIRECT ATTACK ON THE PRIMARY INFECTION

Mysteclin-V strikes directly at all tetracycline sensitive organisms—most pathogenic bacteria, certain large viruses, Endamoeba histolytica. It provides all benefits of tetracycline in the effective phosphate complex form.[1] Patient response is rapid because initial high peak blood serum levels may be maintained easily at the antibacterial attack level until the infection is conquered.

MYSTECLIN-V CONTAINS MYCOSTATIN FOR A SPECIFIC DEFENSE AGAINST SECONDARY MONILIAL SUPERINFECTION

Mysteclin-V protects patients against antibiotic induced intestinal moniliasis and its complications, including vaginal and anogenital moniliasis. This protection is provided by Mycostatin, the antifungal antibiotic, with specific action against Candida (Monilia) albicans.[2]

BOTH ARE OFTEN NEEDED WHEN BACTERIAL INFECTION OCCURS

MYSTECLIN-V

SQUIBB TETRACYCLINE PHOSPHATE COMPLEX (SUMYCIN) AND NYSTATIN (MYCOSTATIN)

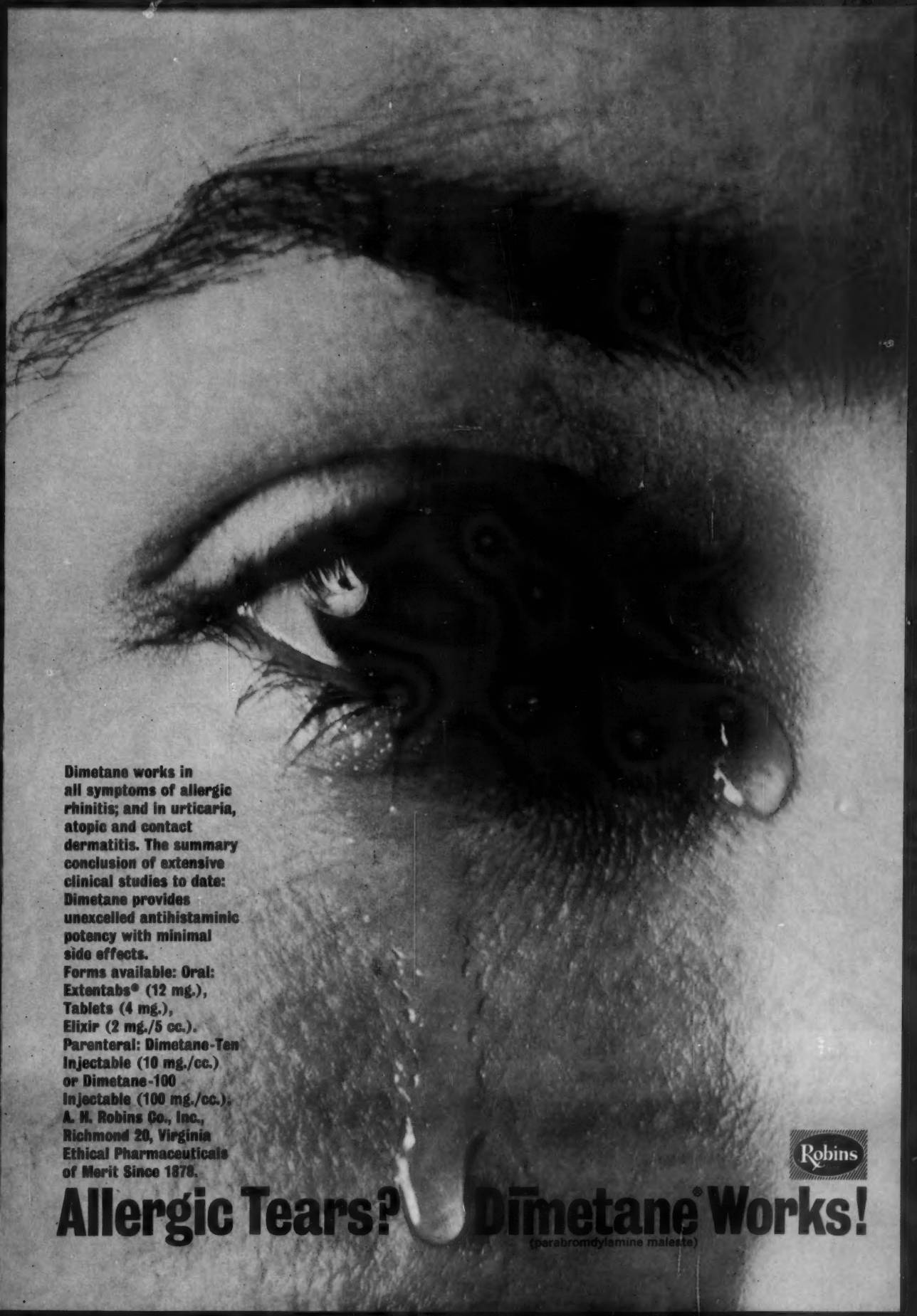
Capsules (250 mg./250,000 u), bottles of 16 and 100.
Half-strength Capsules (125 mg./125,000 u), bottles of 16 and 100.
Suspension (125 mg./125,000 u per 5 cc.), 2 oz. bottles.
Pediatric Drops (100 mg./100,000 u per cc.), 10 cc. dropper bottles.

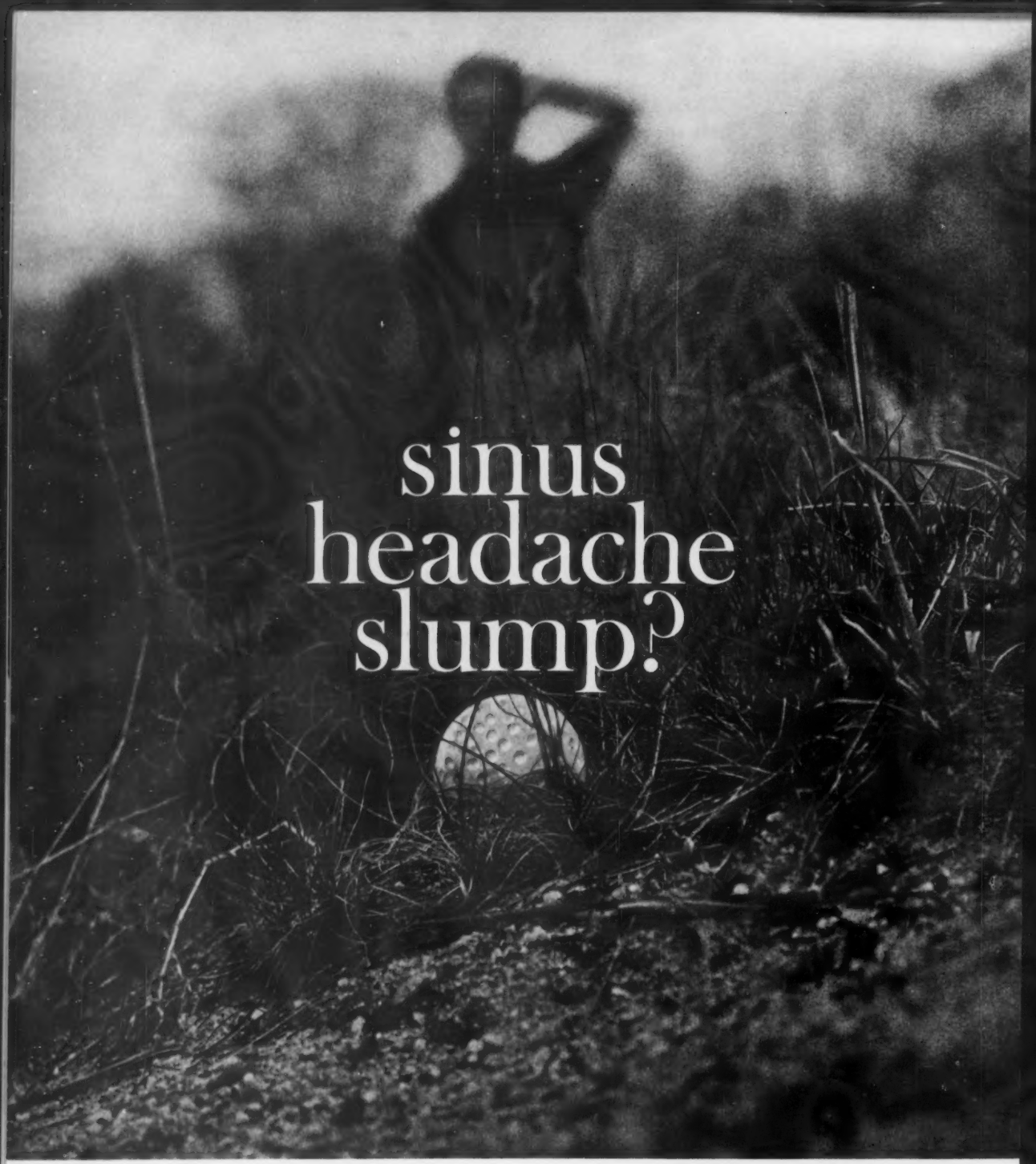
References: 1. Cronk, G. A.; Naumann, D. E., and Casson, K.: Antibiotics Annual 1957-1958, New York, Medical Encyclopedia Inc. 1958, p. 397 • 2. Newcomer, V. D.; Wright, E. T., and Sternberg, T. H.: Antibiotics Annual 1954-1955, New York, Medical Encyclopedia Inc., 1955, p. 686.

SQUIBB

Squibb Quality—the Priceless Ingredient

*MYSTECLIN®, *SUMYCIN®, AND *MYCOSTATIN® ARE SQUIBB TRADEMARKS


Dimetane works in all symptoms of allergic rhinitis; and in urticaria, atopic and contact dermatitis. The summary conclusion of extensive clinical studies to date: Dimetane provides unexcelled antihistaminic potency with minimal side effects.
Forms available: Oral: Extentabs® (12 mg.), Tablets (4 mg.), Elixir (2 mg./5 cc.). Parenteral: Dimetane-Ten Injectable (10 mg./cc.) or Dimetane-100 Injectable (100 mg./cc.).
A. H. Robins Co., Inc., Richmond 20, Virginia
Ethical Pharmaceuticals of Merit Since 1878.
Robins
Allergic Tears? Dimetane® Works!
(perabromdylamine maleate)



Nothing takes the edge off summer fun like the dulling pain of sinus headache. Sinus and nasal membranes are prone to engorgement by the ravages of pollens, fumes and dust. Even air blasts from summer driving lead to the misery of sinus or frontal headache. Fortunately now you can resolve summer sinus headache promptly with a single prescription. New Sinutab aborts pain, systemically decongests intranasal membranes, and provides mild tranquilizing action to relax the patient.

DOSAGE: Adults: Two Sinutab tablets every four hours. Prophylactically, one tablet every four hours. Children 6-12 years: one-half adult dosage. FORMULA: N-acetyl-para-aminophenol (APAP), 150 mg., (2½ gr.); Acetophenetidin, 150 mg., (2½ gr.); Phenylpropanolamine HCl, 25 mg.,(⅜ gr.); Phenyltoloxamine Dihydrogen Citrate, 22 mg., (⅓ gr.). SUPPLIED: Bottles of 30 tablets.

resolve summer sinus headache

Sinutab*

WARNER CHILCOTT

MORRIS PLAINS, N.J.

*TRADEMARK

for hot weather ears

the FURACIN forecast: immediate relief, rapid clearing

FURACIN Ear Solution provides rapid bactericidal action against most of the organisms encountered in otitis externa and media.[1,2] It acts quickly to lessen pain, itching, malodor and drainage—even in patients who had previously been refractory to other agents.[3]

Intended for topical application only, FURACIN obviates complications which may result from the local administration of agents widely used for systemic therapy.[4]

FURACIN® EAR SOLUTION

BRAND OF NITROFURAZONE

broadly bactericidal—even in tissue exudates / negligible bacterial resistance / nonirritating / slightly viscid—does not evaporate / water-soluble—facilitates cleansing / odorless and nonstaining / anhydrous

Formula: FURACIN 0.2% in hygroscopic, water-soluble, anhydrous polyethylene glycol. *Supply:* Dropper bottle of 15 cc.

References: 1. Alonso, M.: Bol. As. Med. Puerto Rico 50:105, 1958. 2. Benton, C. D., Jr.: South. M. J. 48:546, 1955. 3. Peele, J. C.: Laryngoscope 63:488, 1953. 4. Leopold, I. H.: J. M. Soc. N. Jersey, 53:213, 1956.

THE NITROFURANS—a *unique* class of antimicrobials . . .
neither antibiotics nor sulfonamides

EATON LABORATORIES, NORWICH, NEW YORK

In Mild Depression

- with chronic fatigue
- with neurasthenia
- with difficulty in concentrating

Anti Depressant

Deaner®

p-acetamidobenzoic acid salt of 2-dimethylaminoethanol

A totally new molecule with a new type of *gentle* antidepressant effectiveness... free from undesirable overstimulation and hyperirritability. Also, notably effective in children with behavior problems.

Supplied in scored tablets containing 25 mg. of 2-dimethylaminoethanol as the *p*-acetamidobenzoic acid salt. In bottles of 100 and 500.

Riker

Northridge, California

CYANAMID

Davis & Geck Sutures 1909—1959

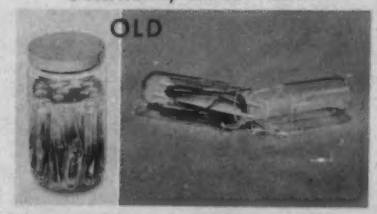
50 Years of Service to the Surgical Profession

SURGICAL PRODUCTS NEWS

NO. 3

NEW DAVIS & GECK SUTURES ARE SAFER, MORE CONVENIENT FOR OFFICE USE

Individual, Quick-Opening Sterile Strip Packs Replace Clumsy Jars, Solutions, Glass Tubes



Old-style tubed sutures (top), are stored in common jars and solutions. Glass tube must be shattered to release each suture. Unopened tubes must be returned to jars, posing a constant threat of cross-contamination with "staph." or other organisms, particularly the hepatitis virus whose susceptibility to any cold germicidal solution is unknown.

New Surgilope SP® sterile strip pack sutures (bottom) are packaged individually in plastic double envelopes. To dispense, simply strip open outer envelope and remove sterile, sealed inner envelope containing suture. There are no awkward jars and solutions to handle, no broken glass hazards. Extra sutures are opened only as needed. Resterilization problems—and the possibility of cross-contamination—are eliminated.

Leading hospitals have rapidly adopted new Surgilope SP sutures. Now, for convenient office use, a wide selection of these sutures—in surgical gut, silk, cotton, nylon, linear polyethylene and stainless steel, ready-armed with Atraumatic® needles—has been packaged in handy one-dozen boxes. In addition, the special Emergency Suture Set, containing six sterile, nonabsorbable sutures in a plastic, snap-catch box is offered as a compact item for the doctor's bag.

You can see that your local pharmacy receives full information on how to obtain Davis & Geck Sutures by mailing the coupon on the reverse side.

Drugstores to Carry New Sterile Silicone Spray

Well Tolerated, Easy-to-Use Skin Protectant for Bedsores, Diaper Rash, Common Skin Irritations

New Topasil* Silicone Skin Protectant is one of the many outstanding products now available to pharmacies, and will be readily obtainable by patients when the physician specifies it.

New Topasil provides the established benefits of silicone in the prevention and treatment of skin irritations, filming the surface with a greaseless, odorless coating that seals it against the effects of incontinence, abrasion, or irritating secretions. In addition, Topasil has the important added advantages of sterility and spray-on convenience. It may be quickly and easily applied in the home without messiness, and without hands ever touching the area involved.

Pharmacies Quick to Stock Surgical Products Line

Report Widespread Physician Interest in Obtaining Davis & Geck Sutures, Vim® Syringes & Needles, and Other Surgical Specialties at Drugstores

Elmer P. Siladi of Siladi's Pharmacy, Stamford, Connecticut, shows his new line of Vim Syringes and Needles, Davis & Geck Sutures, and other Surgical Products Division specialties. "Doctors think highly of D & G and Vim products and are delighted to have them available here at my pharmacy," he says.

Leading prescription pharmacies throughout the country are reporting wide physician interest in obtaining Davis & Geck Sutures, Vim Syringes and Needles and other exclusive surgical specialties, through their drugstore.

Druggists report that many doctors familiar with Davis & Geck and Vim products spoke to them about carrying the line immediately after the first announcement appeared. Other physicians are taking advantage of the return coupon in *Surgical Products News* to make certain that their favorite pharmacy receives full information.

Be Sure Your Pharmacy Knows About Surgical Products Division's Drugstore Marketing Plan—Fill Out and Mail the Perforated Coupon on the Reverse Side!

**Trademark*

OWENS® NON-ADHERENT DRESSINGS NOW USED ROUTINELY BY MANY PHYSICIANS

New Contact Dressing Applied to All Surface Wounds Prevents Pain and Tissue Damage on Removal, Does Not Restrict Proper Drainage

Sterile Owens Dressings—Plain or Neomycin-Treated—are supplied double-wrapped in individual envelopes for handy application. Sizes are 3" x 8" and 8" x 12".

Owens Non-Adherent Dressings—both Plain and Neomycin-Treated—are finding wide usage in general practice. Packaged sterile in individual envelopes, the dressings are quickly applied to the surface of cuts, burns, abrasions, incisions, and ulcerations before gauze or other wound coverings are added. Physicians find that the unique microgauge weave allows liquid exudates to pass freely, but bars penetration of the capillary buds that cause wound adherence. Because removal without sticking is assured, dressing changes need no longer be a painful, time-consuming ordeal and healing is generally hastened because tissue damage is avoided.

Owens Dressing before removal 5 days after surgery. Note that drainage has not been prevented.

Photo taken 30 seconds later shows ease with which dressing is peeled back . . . no disruption of healing surfaces.

VIM SYRINGE AND NEEDLE LINE INCLUDES MANY OUTSTANDING SPECIALTY ITEMS

In addition to well-known Vim Clear Barrel Interchangeable Syringes, long-lasting Laminex† Needles, and new premium-quality Disposable Syringes and Needles, a number of outstanding Vim specialty products may now be obtained through local pharmacies.

EXCLUSIVE VIM BIEGELEISEN BIOPSY NEEDLE SIMPLIFIES PROCEDURE, MINIMIZES TRAUMA

Developed by Dr. H. I. Biegeleisen, this unique auger needle design makes routine tissue biopsy procedures more convenient and efficient. The instrument consists of three parts: an outer cannula, an obturator, and a screw-thread inner cutting needle. A spring clip precisely controls penetration as the inner needle is rotated into the suspected tissue. The cutting grooves easily detach a specimen of maximum size and hold it firmly for withdrawal.

BIEGELEISEN BIOPSY NEEDLE

Vim Oden Needle For Intradermal Injection

Particularly useful in mass inoculation programs, the Vim Oden Needle features a specially beveled hub and short cannula. Rested flat against the skin the slanted hub automatically provides the exact angle of entry for correct intradermal penetration.

Vim Insulin Syringe With TruSet Control

Vim Insulin Syringes have specially designed tips which reduce insulin waste to a minimum. Calibrations in contrasting colors make dosage reading simple and definite.

The exclusive TruSet Control virtually eliminates the chance of inaccurate dosage when insulin is self-administered, by allowing the physician to set the exact amount of insulin which the patient may draw into his syringe. The syringe may be easily cleaned and sterilized *without removing the TruSet Control or changing its setting.*

Kindly send me my copy of the new, full-line Surgical Products Division Catalog and Price List.
Number of additional copies needed, if any ( )

NAME_____
(please type, or print clearly)

TITLE_____

ADDRESS_____

Fill out and mail this coupon to:

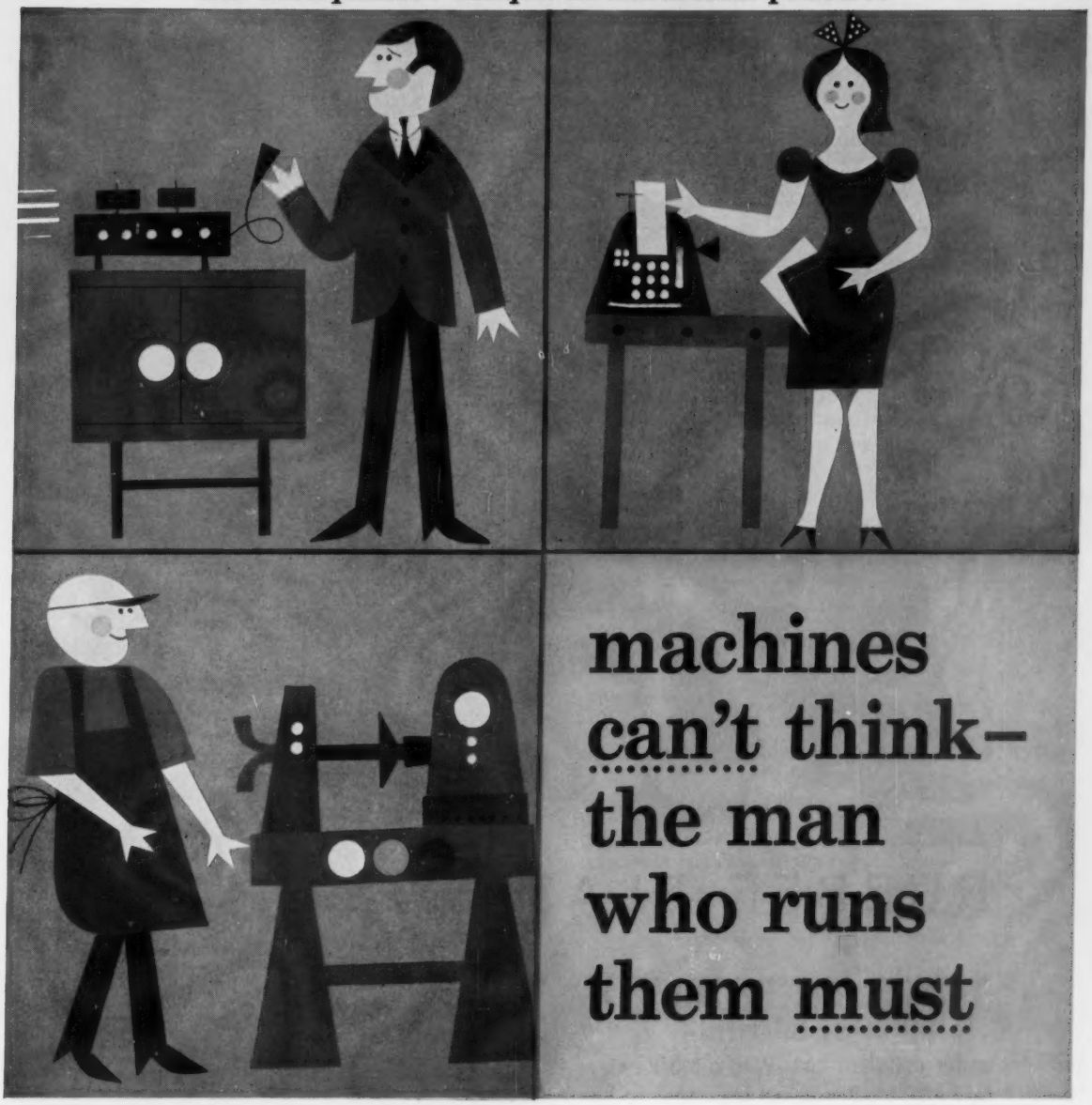
AMERICAN CYANAMID COMPANY, SURGICAL PRODUCTS DIVISION, DANBURY, CONN.

†*Reg. U.S. Pat. Off.—S. & R. J. Everett Co., Ltd.*

CYANAMID
AMERICAN CYANAMID COMPANY
SURGICAL PRODUCTS DIVISION
30 ROCKEFELLER PLAZA
NEW YORK, N. Y.

SALES OFFICE: DANBURY, CONNECTICUT

the tranquilizer unique in industrial practice



machines can't think– the man who runs them must

ATARAX®

(brand of hydroxyzine)

Relieves anxiety without impairing judgment. With ATARAX, the employee being treated for emotional disturbances "retains full consciousness . . . but his reactions have become those of a completely balanced individual."[2]

ATARAX is safe
even in amounts several times the average therapeutic dose.[3]

"is especially well-suited for ambulatory neurotics who must work, drive a car or operate machinery."[1]

Dosage: Adults, one 25 mg. tablet or 1 tbsp. Syrup q.i.d. Children, 1 or 2 10 mg. tablets, or 1 or 2 tsp. Syrup t.i.d.

Supplied: Tiny 10 mg., 25 mg., and 100 mg. tablets, bottles of 100. Syrup, pint bottles. Parenteral Solution, 10 cc. multiple-dose vials.

References: 1. Ayd, F. J., Jr.: New York J. Med. *57*:1742 (May 15) 1957. 2. Bayart, J.: Presented at the International Congress of Pediatrics, Copenhagen, Denmark, July 22-27, 1956. 3. Cohen, S.: Am. Pract. & Digest Treat. *8*:946 (June) 1957.

New York 17, N. Y.
Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being

RUBBER ELASTIC BANDAGE

STANDS OUT BECAUSE IT STANDS UP

under constant use—With a **tensile strength greater than any competitive bandage,** amazing new ACE has increased resistance to tearing built into every strand. Even after repeated wear and laundering, ACE continues to provide firm, anatomically correct support.

under higher heat—Even **15 hours of dry heat sterilization at 320° F.** can't wilt this new ACE... the specially developed rubber threads retain elasticity to a degree never thought possible before.

for maximum economy—Specify ACE hospital packaging. Individually polyethylene wrapped bandages, 2", 2½", 3" or 4" widths, in boxes of twelve...6" width in boxes of six. Readily available from your nearby distributor—the single source for most of your hospital supplies.

BECTON, DICKINSON AND COMPANY · RUTHERFORD, NEW JERSEY

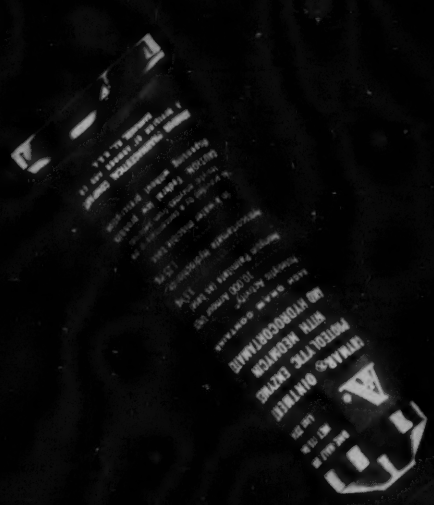
B-D AND ACE ARE REGISTERED TRADEMARKS OF BECTON, DICKINSON AND COMPANY

68859

the only comprehensive

dermatologic ointment

CHYMAR®
ointment



cleans the lesion

Proteolytic Activity

Chymar Ointment removes necrotic tissues, crusts and exudates . . . exposes the wound surface to the full effects of the anti-infective and anti-inflammatory agents . . . counteracts odors . . . promotes healing.

clears infection

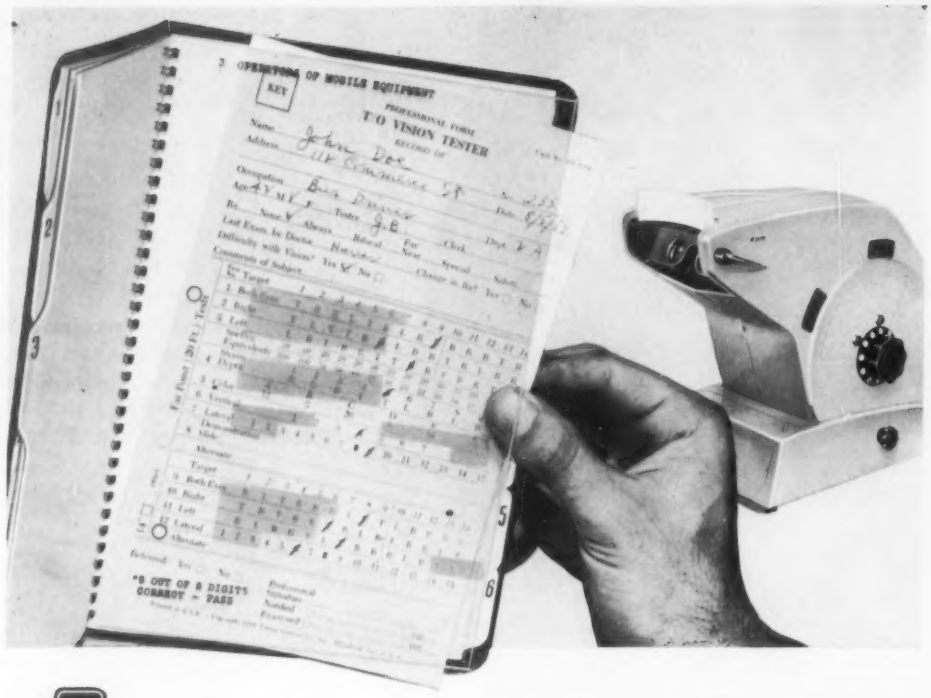
Antibiotic Action

The powerful antibacterial action of neomycin palmitate destroys both gram-negative and gram-positive bacteria and some fungi . . . prevents further bacterial invasion . . . rarely produces bacterial resistance.

controls inflammation

Corticosteroid Effects

Chymar Ointment reduces burning and itching associated with inflammatory dermatoses, wounds, burns and ulcers . . . keeps the patient more comfortable while the lesions heal . . . helps prevent spread of infection through scratching . . . produces no corticosteroid side effects.



New Titmus Job Standard Templets

For Quick, Precise Evaluation of Vision Tests Based on Today's Job Standards!

T/O introduced a year ago a revolutionary new vision tester, now acclaimed by professional men as an instrument without equal.

Today T/O introduces another advance in vision testing, with the announcement of entirely new, modern job standard templets for test evaluation. They have been developed from careful studies of vision related to job standards in all major categories of *today's* occupations. With them, comprehensive evaluation of employee test records can be made quickly and simply.

Together, the T/O Tester & Templets offer unprecedented speed, accuracy, dependability, and uniformity in vision testing. They permit a new degree of precision, and discrimination. Pass and fail standards may be adjusted to fit local situations.

The T/O instrument and tests are technically, mechanically, and psychologically superior to others in use today. And the T/O Tester is the only one with pushbutton remote control.

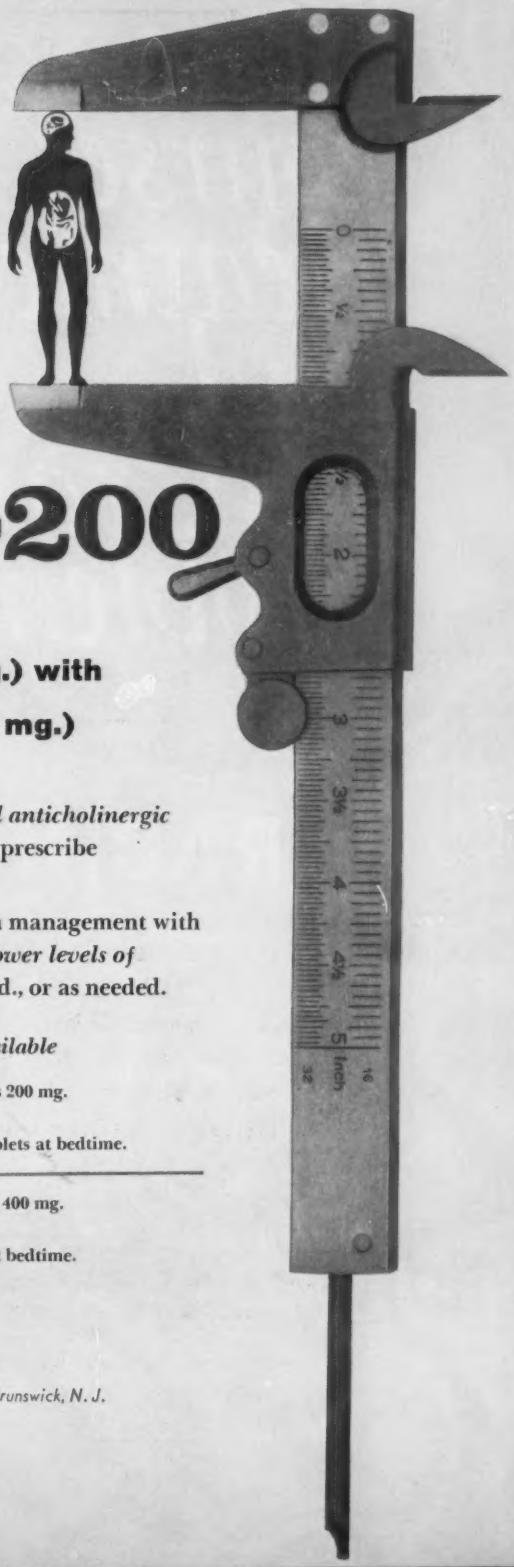
Brochure on T/O Vision Tester, and free samples of new Job Standards, sent upon request; write today!

TITMUS OPTICAL COMPANY, INC. • *Petersburg, Virginia*

NEW G.I. DOSAGE FORM

FOR DOSAGE ADJUSTABLE TO

THE MEASURE OF THE MAN



Milpath®-200

200 mg. Miltown® + 25 mg. anticholinergic

½ strength Miltown (200 mg.) with full-level anticholinergic (25 mg.)

...When the G. I. patient requires *increased anticholinergic effect* with normal levels of tranquilization, prescribe 2 Milpath 200 t.i.d., or as needed.

...When the G. I. patient requires long-term management with established anticholinergic levels but with *lower levels of tranquilization,* prescribe 1 Milpath 200 t.i.d., or as needed.

Two dosage forms of Milpath are now available

MILPATH 200—Each yellow, coated tablet contains 200 mg. meprobamate and 25 mg. tridihexethyl chloride.

DOSAGE: 1 or 2 tablets t.i.d. at mealtime and 2 tablets at bedtime.

MILPATH 400—Each yellow, scored tablet contains 400 mg. meprobamate and 25 mg. tridihexethyl chloride.

DOSAGE: 1 tablet t.i.d. at mealtime and 2 tablets at bedtime.

Both forms supplied in bottles of 50 tablets.

WALLACE LABORATORIES *New Brunswick, N. J.*

25,000,000 courses of treatment— and NO "resistance" problems

*Conservative estimate based on combined use of all FURACIN preparations since 1945.

FURACIN®

brand of nitrofurazone

In clinical use for more than 12 years and today the most widely prescribed single topical antibacterial, FURACIN—like other nitrofurans—remains effective against pathogens which have developed, or are prone to develop, resistance to other antibacterial agents. There has been no evidence that originally sensitive strains of staphylococci or other bacteria lose their susceptibility to FURACIN in any significant degree.

the wide-spectrum antibacterial exclusively for topical use ... in dosage forms for every topical need

Available as Soluble Dressing, Soluble Powder, or Solution. Also in Vaginal and Urethral Suppositories and in special formulations for eye, ear and nose.

one of the unique nitrofurans— products of Eaton research

Eaton Laboratories, Norwich, New York

New ORAL DECONGESTANT

DRISTAN®

TABLETS

afford a new degree of symptomatic relief from

- **SINUSITIS**
- **THE COMMON COLD**
- **ALLERGIC DISORDERS**

Minimizes the Hazard of Drowsiness on the Job

as compared with other preparations containing antihistamines

Unique 3-layer decongestant tablet development offers a combination of ingredients never before possible to put into a single tablet.

DRISTAN—*Faster In Therapeutic Action*

Regular Enteric Coated Tablet	3-Layer Uncoated Dristan Tablet
Disintegrates in 3 hours	Disintegrates in 7 minutes

Dristan Decongestant Tablets—afford *a new degree of relief* from the symptoms of sinusitis, nasal allergies, postnasal drip and the common cold by releasing:

(1) A POWERFUL VASCOCONSTRICTOR . . . phenylephrine hydrochloride. This shrinks swollen sinus membranes and promotes proper drainage.

(2) A UNIQUE ANTIHISTAMINE . . . phenindamine tartrate. Rarely produces drowsiness. Controls the edema and discharge caused by offending allergens.

(3) VITAMIN C. Under body stress such as fever and infectious diseases—the normal requirements double. The daily dose of Vitamin C in Dristan is *more than twice* the recommended daily allowance.

(4) Approved APC formula . . . aspirin, phenacetin and caffeine.

Professional Supplies on Request:
Ask the detail man from Whitehall Laboratories or send request on your professional letterhead to:

References: Annals of Allergy, Vol. 6. July-August 1948. Study of a New Histamine Antagonist, The Pennsylvania Med. J., Vol. 51. Clinical Study of a New Antihistaminic Drug—Phenindamine. Dristan Clinical Study.

WHITEHALL LABORATORIES
22 EAST 40TH STREET, NEW YORK 16, N. Y.

to relieve pain of dysmenorrhea . . .

remember **Zactirin**®

Ethoheptazine Citrate with Acetylsalicylic Acid, Wyeth

ZACTIRIN will return many patients suffering from the pain of dysmenorrhea to normal physical activity. Its analgesic effect is equivalent to that of codeine, yet it is non-narcotic, hence has no addiction liability. Side-reactions are mild and low in incidence.

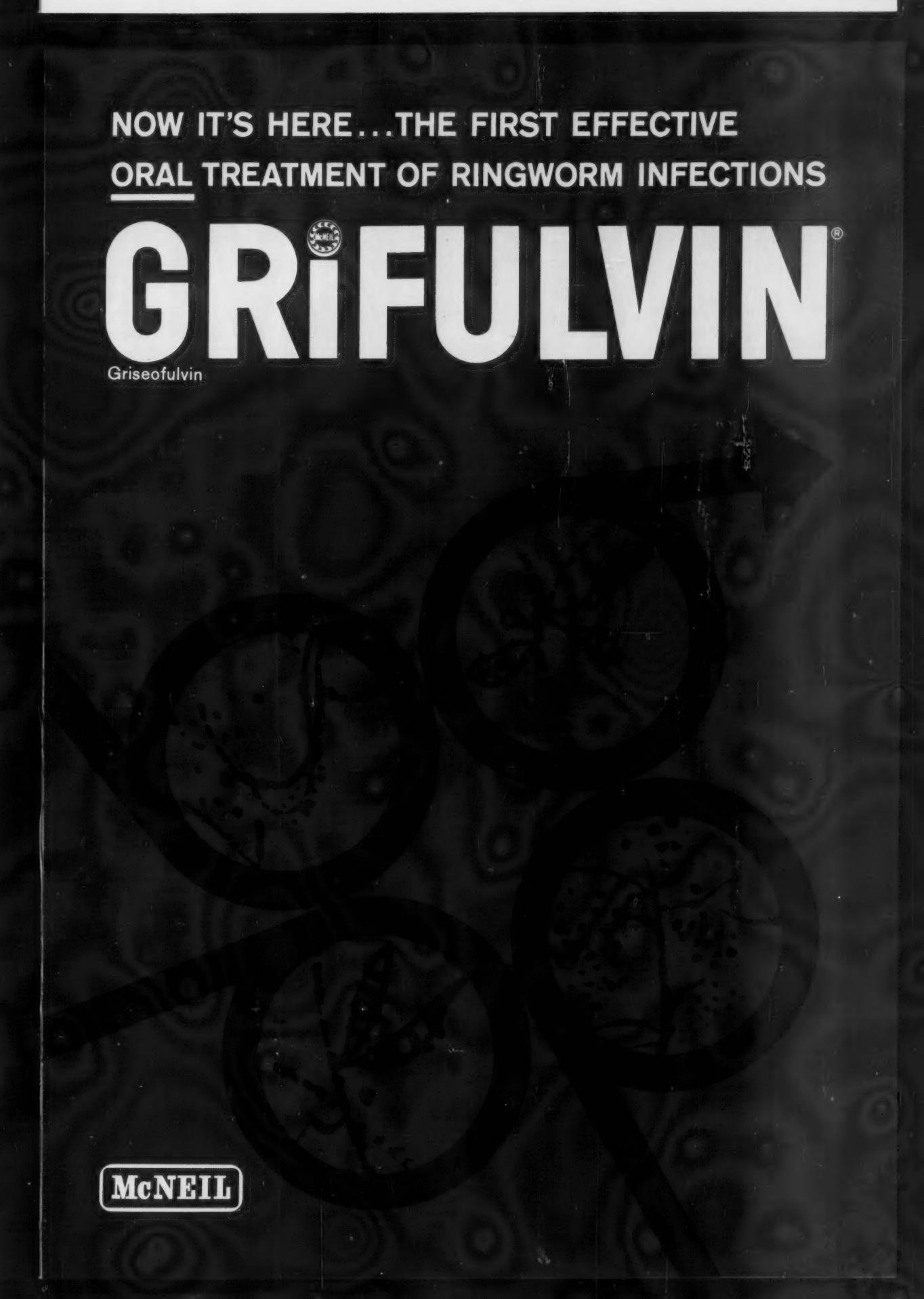
Supplied: Tablets, bottles of 48. Each tablet contains 75 mg. of ethoheptazine citrate and 325 mg. (5 grains) of acetylsalicylic acid.

Wyeth®
Philadelphia 1, Pa.

NOW IT'S HERE...THE FIRST EFFECTIVE
ORAL TREATMENT OF RINGWORM INFECTIONS

GRISEOFULVIN®

Griseofulvin



McNEIL

"...A FUNDAMENTALLY NEW THERAPEUTIC APPROACH..."

GRiFULVIN®

Griseofulvin

Representing the achievement of a long-sought therapeutic goal, GRIFULVIN is the first *oral* antifungal agent that is effective in many common superficial fungous diseases:[1-4]

- *Tinea corporis* usually clears in 2 to 4 weeks; itching stops in 3 to 5 days.
- *Tinea pedis* usually requires 3 to 6 weeks to clear.
- *Tinea capitis* usually improves in 2 to 3 weeks.
- *Onychomycosis* takes 3 to 4 months to clear, but new normal nail growth is seen earlier.
- Oral GRIFULVIN appears to have a very low level of toxicity...no evidence of damage to liver or kidneys.

STRIKING CLINICAL RESULTS IN FUNGOUS INFECTION OF THE SKIN, HAIR, AND NAILS

In two clinical studies[1,2] comprising 41 patients, *all* dermatomycoses caused by any species of *Trichophyton*, *Microsporum* or *Epidermophyton* showed a uniformly favorable response to GRIFULVIN. Patients found rapid relief from itching; infected palms soon lost their hyperkeratosis; normal sweating, long absent, returned; normal growth replaced infected nails, and scalp lesions disappeared in two weeks. Subjective complaints by patients were few and mild.

See professional literature for details of administration and dosage.

Supplied: 250 mg. scored, aquamarine tablets, imprinted McNEIL, bottles of 16.

(1) Williams, D. I.; Marten, R. H., and Sarkany, I.: Lancet *2*:1212 (Dec. 6) 1958. (2) Blank, H., and Roth, F. J., Jr.: A.M.A. Arch. Dermat. *79*:259, 1959. (3) Goldfarb, N., and Rosenthal, S. A.: Current M. Digest *26*:99, 1959. (4) Wrong, N. M.: Canad. M. A. J. *80*:656 (April 15) 1959.

McNEIL

McNEIL LABORATORIES, INC • PHILADELPHIA 32, PA.

26959

DRAMATIC IMPROVEMENT IN TRADITIONALLY REFRACTORY RINGWORM INFECTIONS

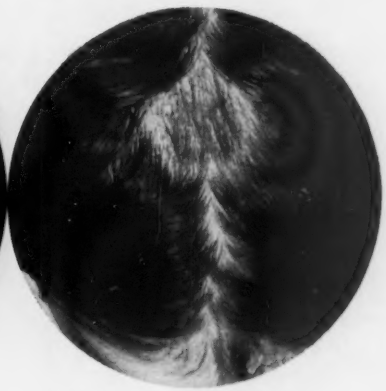
T. rubrum infection of 7 years' duration.

After 4 months of treatment with GRIFULVIN.

Same patient after 6 months of treatment with GRIFULVIN.

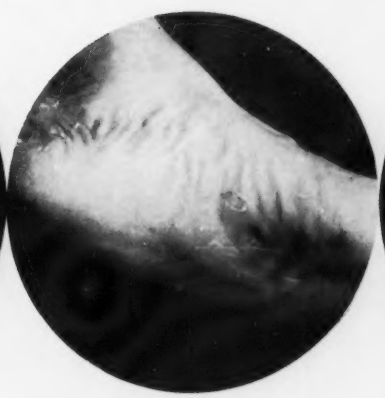
T. rubrum infection of 20 years' duration.

Before treatment.



After 1 month of treatment with GRIFULVIN.

M. canis infection of 6 months' duration.



Before treatment.

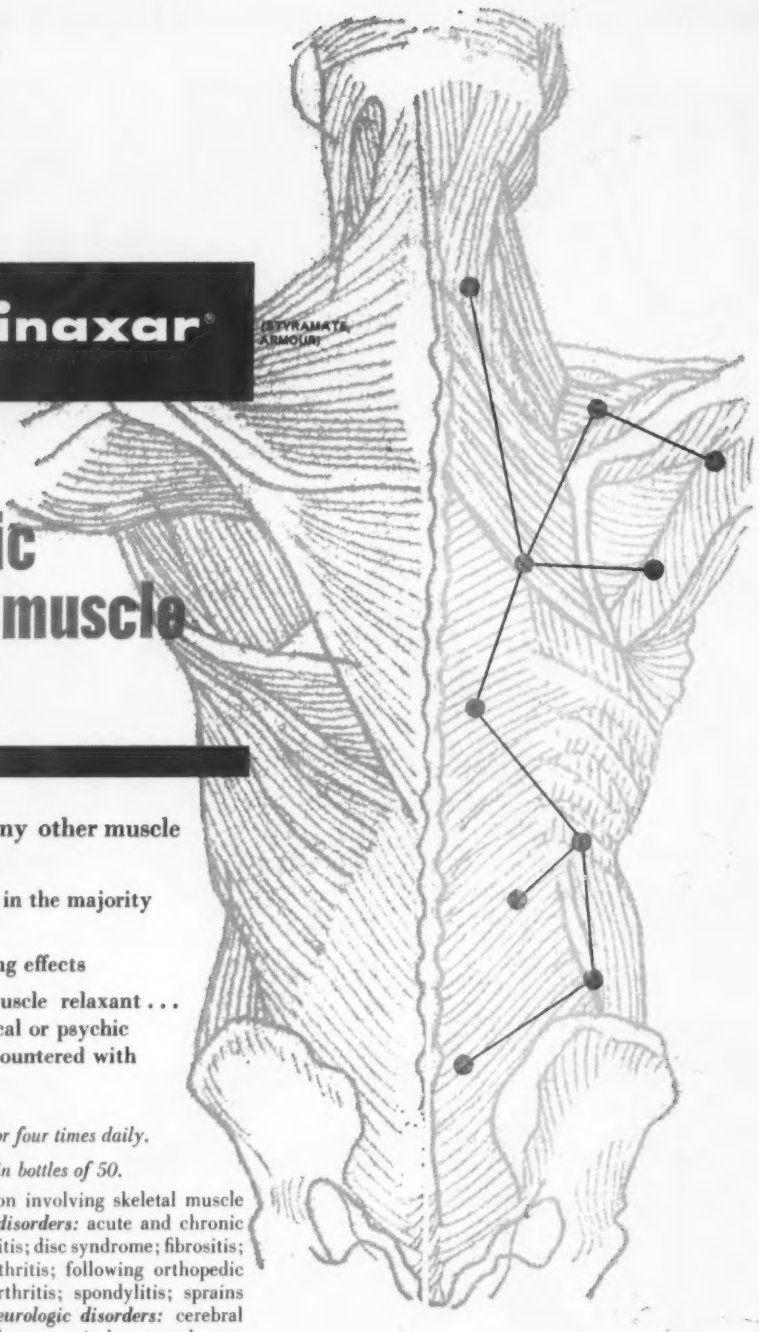
Three months after therapy with GRIFULVIN.

The patients shown above received GRIFULVIN brand of griseofulvin. Photographs by courtesy of Harvey Blank, M.D.; Miami, Fla.

rely on

Sinaxar® (STYRAMATE, ARMOUR)

a specific skeletal muscle relaxant



Chemically unlike any other muscle relaxant, Sinaxar is

- **consistently effective in the majority of cases**
- **long acting: no fleeting effects**
- **purely a skeletal muscle relaxant . . . free of adverse physical or psychic effects frequently encountered with tranquilizers**

DOSAGE: *Two tablets three or four times daily.*

SUPPLIED: *200 mg. tablets in bottles of 50.*

INDICATIONS: Any condition involving skeletal muscle spasm, as ***musculoskeletal disorders:*** acute and chronic back ache; arthritides; bursitis; disc syndrome; fibrositis; myalgia; myositis; osteoarthritis; following orthopedic procedures; rheumatoid arthritis; spondylitis; sprains and strains; torticollis; ***neurologic disorders:*** cerebral palsy; cerebrovascular accidents; cervical root syndrome; multiple sclerosis.

ARMOUR

ARMOUR PHARMACEUTICAL COMPANY • *A Leader in Biochemical Research* • KANKAKEE, ILLINOIS

for fast, comprehensive relief of hay fever distress

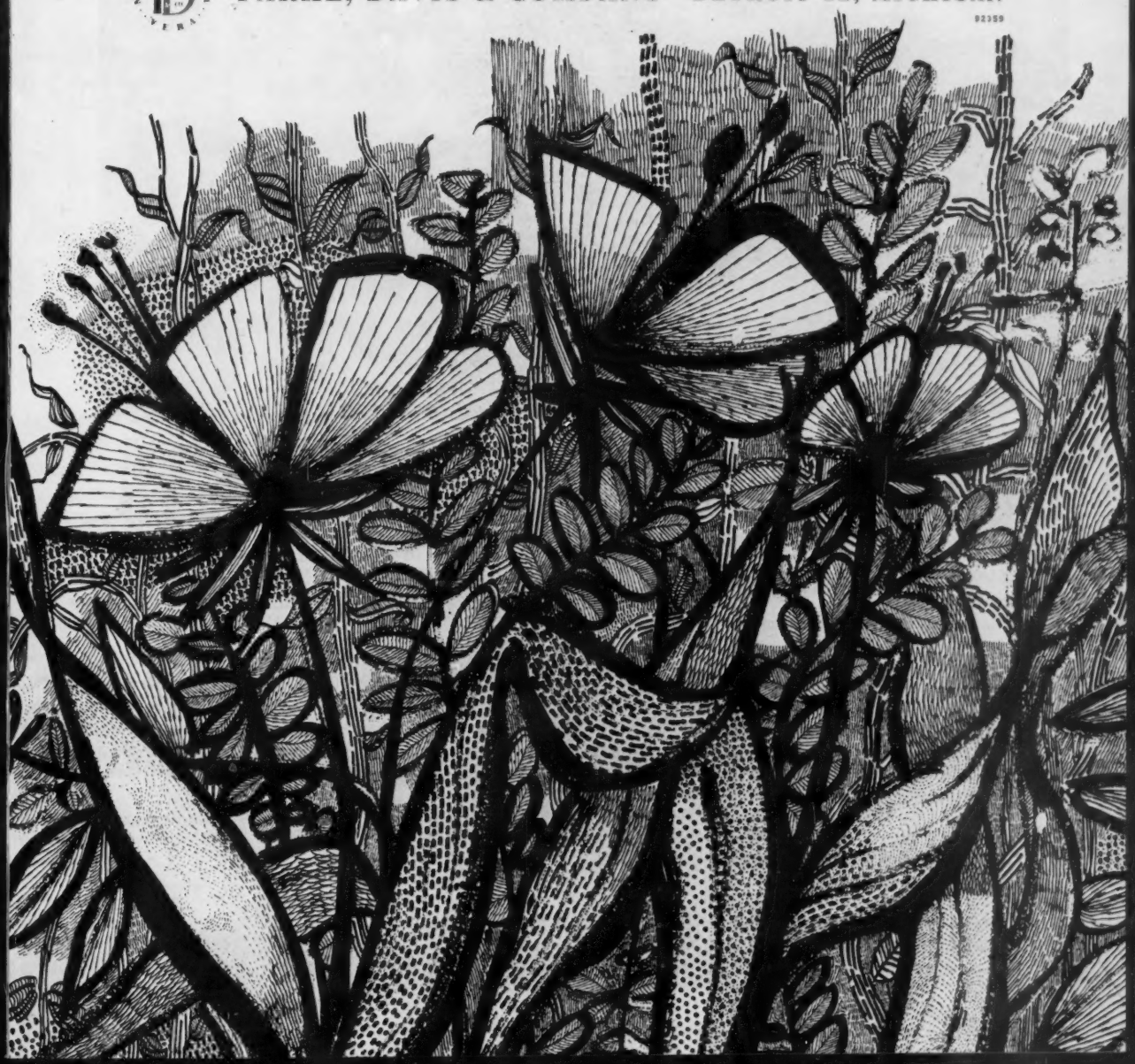
BENADRYL®

ANTIHISTAMINIC-ANTISPASMODIC

You can help your allergic patients to enjoy greater comfort during the hay fever season by prescribing BENADRYL. *Its potent antihistaminic action relieves nasal blockage, rhinorrhea, sneezing, itching, and related allergic reactions, while its atropine-like antispasmodic action suppresses bronchial and gastrointestinal spasm.* BENADRYL *Hydrochloride (diphenhydramine hydrochloride, Parke-Davis) is available in a variety of convenient forms including: Kapseals,® 50 mg. each; Kapseals, 50 mg., with ephedrine sulfate, 25 mg.; Capsules, 25 mg. each; Elixir, 10 mg. per 4 cc.; and Emplets,® 50 mg. each, for delayed action. For parenteral therapy,* BENADRYL *Hydrochloride Steri-Vials,® 10 mg. per cc.; and Ampoules, 50 mg per cc.*

PARKE, DAVIS & COMPANY · DETROIT 32, MICHIGAN

92359



with

BUFFERIN® IN ARTHRITIS

salicylate benefits with minimal salicylate drawbacks

Rapid and prolonged relief—with less intolerance.

The analgesic and specific anti-inflammatory action of BUFFERIN helps reduce pain and joint edema—comfortably. BUFFERIN caused no gastric distress in 70 per cent of hospitalized arthritics with proved intolerance to aspirin. (Arthritics are at least 3 to 10 times as intolerant to straight aspirin as the general population.[1])

No sodium accumulation. Because BUFFERIN is sodium free, massive dosage for prolonged periods will not cause sodium accumulation or edema, even in cardiovascular cases.

Each *sodium-free* BUFFERIN tablet contains acetylsalicylic acid, 5 grains, and the antacids magnesium carbonate and aluminum glycinate.

Reference: 1. J.A.M.A. 158:386 (June 4) 1955.

ANOTHER FINE PRODUCT OF BRISTOL-MYERS

Bristol-Myers Company, 19 West 50 Street, New York 20, N. Y.

KENACORT

SQUIBB TRIAMCINOLONE

for all your patients starting on corticoids

Kenacort safely starts your patients off right — with all the benefits of systemic corticosteroid therapy and few side effects to worry about. Increased corticoid activity is provided on a low dosage schedule[1-3] without edema,[1-4] psychic stimulation,[1-3] or adverse effect on blood pressure.[1-3,5] A low sodium diet is not necessary.[4,5] Gastrointestinal disturbances are negligible[2,4,5] with less chance of peptic ulcer.[4] This makes Kenacort particularly valuable in treating your "problem patients" — such as the obese or hypertensive and the emotionally disturbed.

for all your patients with dermatoses requiring corticoids

Kenacort, particularly in treating inflammatory skin conditions, has proved effective where other steroids have failed. It quickly alleviates itching, erythema, and irritation with its enhanced antiallergic, anti-inflammatory and antipruritic activity. Because of its low dosage[1-3] and relative freedom from untoward reactions,[1-5] Kenacort provides corticosteroid benefits to many patients who until now have been difficult to control. It is particularly valuable for your dermatologic patients with hypertension, cardiac disease, obesity and those prone to psychic disturbances.

REFERENCES: • 1. Freyberg, R. H.; Berntsen, C. A., Jr., and Hellman, L.: Arth. & Rheum. 1:215 (June) 1958. • 2. Sherwood, H., and Cooke, R. A.: J. Allergy **28**:97 (March) 1957. • 3. Shelley, W. B.; Harun, J. S., and Pillsbury, D. M.: J.A.M.A. **167**:959 (June 21) 1958. • 4. Dubois, E.L.: California Med. **89**:195 (Sept.) 1958. • 5. Hartung, E.F.: J.A.M.A. **167**:973 (June 21) 1958.

SUPPLIED:
Scored tablets of 1 mg. — Bottles of 50
Scored tablets of 2 mg. — Bottles of 50
Scored tablets of 4 mg. — Bottles of 30 and 100

SQUIBB

Squibb Quality — the Priceless Ingredient

'KENACORT'® IS A SQUIBB TRADEMARK

new Aerosol SURFACAINE®

safe, faster-acting topical anesthetic

Aerosol application of Surfacaine provides almost instant relief of topical pain and discomfort. The mistlike spray permits fine dispersion of the anesthetic's molecules and facilitates prompt superficial absorption. The rapid anesthetic effect is particularly apparent and greatly appreciated in:

- **skin abrasions**
- **thermal and chemical burns**
- **pain and itch of the vulvar or anal areas**
- **postsurgical wounds (especially episiotomies)**
- **insect bites**
- **contact dermatitis**

Packaged in handy 2-ounce units.

Surfacaine® (cyclomethycaine, Lilly)

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U. S. A.

961117

PSYCHIATRIC ASPECTS OF SURGERY

• H. H. GARNER, M.D.
Professor and Chairman
Department of Psychiatry and Neurology
The Chicago Medical School

Reactions to the traumatic experience of surgery are determined by the previous personality state of the patient and the relationship of the current stressful situation to patterns of previous traumatic conditionings.

Many disturbances in mental functioning commonly are encountered in surgery. Instead of being neglected or dismissed, they should be seen as essential concomitants of surgical practice. Surgery cannot be separated from the effects of the psyche. These effects can function as etiologic agents, obscure the diagnosis, influence the pre- and postoperative course, precipitate complications, interfere with convalescence and even prevent the complete recovery of the surgical patient.

Incidence

The incidence of disturbances of an emotional nature are rather difficult to evaluate among patients undergoing surgery. Since mental disturbances are exceedingly common, many patients undergoing surgery may also be experiencing mental disfunctions unrelated to the surgery. How often the disfunction leads to difficulty in the pre- and postsurgical period is not generally known. Christopher[1] quotes Volkmann as having indicated an incidence of psychotic disturbance postoperatively as high as 29%. Tichener *et al.*[2] found as many as 404 of a representative sample of 2,000 patients experiencing psychiatric disorder of clinical significance.

Types of Mental Disturbances

The nature of psychological disturbances occurring the pre- or postoperative period are essentially the same as those described as common psychiatric syndromes in textbooks of psychiatry.[3] Psychophysiologic (autonomic and visceral) disturbances are frequent; psychoneurotic reactions with anxiety, hysterical, phobic, obsessive-compulsive and depressive states are common. The relative frequency of problems encountered with psychoneurotic patients in the pre- and postoperative period reflect, partially at least, the tendency for psychoneurotic patients to be interested and involved in surgery. In an examination of the relative frequency of both major and minor surgery among psychoneurotic and control patients, Ulett and Gildea[4] uncovered a statistically significant higher incidence among psychoneurotics. Personality disorders complicate the life of the surgeon as well as the patient.

Patients with acute and chronic changes in the nervous system associated with circulatory disturbances, disturbances in metabolism as in senility, presenile disorders, diabetes, pellagra, etc.; brain disturbances following intoxications (alcoholic) or other addictions as by drugs or poisons; traumatic effects such as the sequelae of blows on the head, penetrating injuries, electrical and radiation damage, and injury resulting from chronic brain infections (notably encephalitis or syphilis) all tend to show a similar pattern in the expression of a breakdown that may precede or follow a surgical intervention. The organically damaged patient has already developed an impairment in cerebral tissue function and subsequently may have difficulty in comprehension, memory and judgment. The situation of surgery may lead temporarily to a more severe impairment, and the patient already functioning on an impaired level may not so be recognized until a more serious breakdown occurs in the course of surgery. Usually the expression of the disturbance is in judgment and the orientation for time, place and person. Depression, hallucinations, delusions and paranoid expressions may also occur, from mild to florid in manner. Psychoses are more apt to be recognized by the surgeon when the dramatic nature of the mental disfunction calls attention to the patient's difficulty. Psychotic depressions, manic states, schizophrenic disorganization and paranoid projection thus are more easily recognizable when they occur pre- and postoperatively.

Included in the group of patients whom the surgeon finds a problem because of disorganization, defects of memory and intellectual processes and hallucinatory experiences are the alcoholics. Delirium tremens and alcoholic acute hallucinosis may be approached using general principles that we have outlined. Treatment measures used with the acutely ill alcoholic patient and states of chronic alcoholism are discussed in greater detail in the more comprehensive discussions of the treatment of alcoholism. The surgeon may best keep in mind as his immediate goal the task of maintaining an effective physiological and psychological balance in his patient prior to, during and after surgery and not be particularly concerned or involved with "curing" the alcoholism. Hepatic coma[5,6] has been rapidly displacing the concept of cholemia as an important cause of mental confusion. The syndrome of confusion with disorientation, flapping tremor and electroencephalographic abnormalities, although not specific, is suggestive of impending hepatic coma when seen in the patient with liver disease. The hepatic coma has been related by some authors to blood ammonia levels but the evidence to date is somewhat inconclusive. Ammonia elevation with high protein feedings has been suggested as a possible contributor to hepatic coma. Elimination of protein for a day or two may be followed by an improvement which may be related to a decrease in ammonia blood levels. Certainly care should be taken about the use of ammonia salts or urea as therapeutic agents in such patients.

Bases for Pre- and Postoperative Mental Disfunction

Masserman[7] has described the bases for many of the symptoms in his biodynamic principles. Behavior patterns tend to become deviated under stress, and under further frustration and special danger such as surgery tend to elaborate extensive substitutive and symbolic forms of the deviations. When in any given situation two patterns of motivations come into conflict, anxiety mounts and behavior becomes hesitant, vacillating, erratic and poorly adaptive (neurotic) or excessively substitutive and symbolic. During surgery the patient is subject to a highly stressful physiologic and psychologic situation. Commonly the patient is faced with conflicting motivations, i.e., the choice of an operation to save life (removal of a breast cancer) and avoidance of the dangerous, mutilating effects of the surgical procedure. Mental disfunction related to acceptance and experience of surgical procedures are best understood as the breakdown of a previously delicately balanced psychological state. Breakdown in the psychological homeostasis may occur owing to any kind of stressful situation which so alters the psychological or physiological balance that symptoms are precipitated. Symptoms serve an adaptive function in that they (1) express a physiological over or under reaction of the autonomic nervous system (cranial and peripheral nerves) as in sweating, tachycardia, motor twitchings, etc.; (2) maintain a state of increased irritability of the central nervous system (hyperreflexia, increased response to painful stimuli, etc.); (3) precipitate a loss of function (in the case of a psychotic disorder), a drop in the effectiveness of perceptive, integrative or expressive functions of the central nervous system, or a combination of the loss of these functions and failure in the established controls in activity (as in hallucinations, impulsive and aggressive activity); (4) produce regressive maladaptation (excessive sleeping, helplessness, loss of bowel and bladder control) or (5) constitute attempts at restoration of homeostasis (parasympathetic reactions, to balance a previously excessive reaction in the sympathetic system).

Surgery and the Need for Self-Punishment

Surgery is quite obviously perceivable as a stress situation. Less easily perceived is the subtle need for a traumatic and painful ex-

perience on the part of some patients. The patient who seeks or welcomes such a painful situation actually is making an attempt at an adaptive response which to him has positive meaning. The painful situation may be seen by the patient as an attempt to avoid an even worse experience, or may be seen as a means of obtaining some unusual gratification. As Menninger[8] indicated, the painful surgical condition may be accepted as a procedure whereby the patient may avoid some serious mental disintegration. Surgical procedures and painful situations may also be welcomed as a punishment whereby one may atone for real or fancied sins, as a means of diminishing guilt feelings over forbidden or unsanctioned thoughts, wishes or acts and as a procedure whereby the sacrificial offering of a less important part of the body guarantees the safety symbolically of an organ of greater importance. Many anxiety provoking life situations may be avoided by patients through hospitalization. Such avoidance of anxiety may be associated with symptoms suggestive of an acute abdominal illness which in time may lead to a surgical intervention. Rarely does the patient seeking a painful experience to solve a personal problem succeed in doing so. More often is there failure to establish that improved psychological balance to which the patient aspired. The postsurgical course then becomes exceedingly stormy, sometimes after an initial period of what seems to be an unusually satisfactory postsurgical recovery. The disturbance may be in the form of (1) a schizophrenic breakdown often of a paranoid type especially in posthemorrhoidectomy patients or cosmetic surgery; (2) acute panic reaction with fears of serious organ disability; (3) obsessive preoccupation with malignancy and morbidity, supposedly perceived by the surgeon but undisclosed ("I know he found a cancer and won't tell me"); (4) states of disorganization and disorientation of a hysterical deliroid type. Gliebe and Goldman[9] describe a case in which the surgical procedure did not satisfy the needs of the patient. The surgical course was complicated by self-mutilation in the postsurgical period. Careful study may in some patients reveal evidence supporting the possibility that the condition bringing the patient to the surgeon was self-induced or self-inflicted, masquerading as an accident. Witt and Cheavens[10] indicate that surgery and psychotherapy should not be confused. The former does not substitute for the latter. An operation, contrary to popular lay opinion, can never be considered good psychotherapy. Surgery to satisfy some felt need of the patient in the absence of an objective surgical indication is more than unnecessary. It may be dangerous. Recognition of the psychic disturbance before surgery is performed and recognition that the alteration in physiology will not alter the psyche can prevent an undue amount of suffering for the patient, family and the surgeon. Rationalized surgery is not sound and not ethical. Sometimes the astonishing thought is expressed, that although there are no findings, an exploration is justified or some operation is of value because it will have a positive psychological import for the patient. It may be true that in some instances surgery performed for its psychological influence does seem to bring about a restoration of psychological equilibrium. At best, this is a temporary phenomenon. Rarely is such a positive reaction validly predicted. Nor can such an approach be advised as a reasonable and logical course of action, as in the best interests of the patient, or as sound medical practice. If the surgery is of an emergency nature and immediate care is needed, a careful personality study and utilization of the surgeon's skills for helping the patient maintain as good a mental balance as possible will be desirable. Even here, skillful psychiatric help may sometimes be needed. In the case of elective surgery, it is advisable to evaluate the symbolic meaning of the surgery for the patient, and to estimate the degree to which any individual pathological finding should be the basis for surgery when a more serious mental illness is festering behind the organic pathology.

Seeking Body Alterations

Request for some alteration in the body is a frequent and often distressing experience for surgeons. The patient anticipates from this alteration a change in personality, the achievement of certain aspirations and a generally improved success in living. These hopes are supported by advertising and our present day mass communication media. Clothes are presumed to make the man. Napoleon's small stature is popularly accepted as the basis of his drive to greatness, a reaction to feelings of inadequacy. Elevator shoes are necessary equipment for success in love and work for the small man. Plastic surgery has similarly raised the widespread but unfounded hope that an alteration in the shape of a nose, the removal of a facial blemish or the surgical modification of a bosom will bring enhanced success in love, work and interpersonal effectiveness generally. Barker[11] and others have pointed out the tendency to overestimate the potential psychological malignancy of a physical disability. Likewise the power to effect improvement in a person's total life situation by an improvement in physiology alone has been overrated. In the decision to alter the body form surgically, an investigation of the motivation, sources

of anxiety, and nature of the problem to be solved by this act is in order. MacGregor, Hill and Silver[12] have convincingly shown the urgency of understanding psychosocial factors in evaluating the request and in reaching a responsible decision to proceed with the correction of a facial deformity. In the study of a continuous series of patients requesting such plastic surgery, with no other complaints, the conclusion was clear that the desire to alter even an obvious facial deformity has significant neurotic motivation and may best be regarded as a symptom of neurosis. A probability exists that in the absence of planning which includes psychological and sociocultural factors, so abrupt a removal of a defensive system may present so many more problems of readjustment as to generate overwhelming anxiety and precipitate a neurosis or a psychosis. Less malignant but more troublesome may be paranoid litiginous attacks on the physician who has failed to satisfy the patient's aspirations with the surgery.

Mutilation, Removal of Defenses and Deformity

Palmer and Blanton[13] and many other authors mention that certain organs have, in addition to the real functional importance, an unconscious symbolic significance for the patient. Surgical procedures on any organ which has such special meaning for the patient may be seen as highly dangerous and potentially deforming, disfiguring or castrating. The nose has been symbolically equated with virility, beautiful legs with being wanted and admired by men, a well developed chest with masculinity, a well developed bosom with femininity or maternity. Each organ has its own special significance for the patient and an ideal appearance and structure. Any surgery with its potentiality for deformation, irrespective of its potentiality for maintaining life and well-being, runs the risk of being a precipitant agent for creating a psychoneurotic or psychotic breakdown by threatening the special symbolic power of the organ it affects. A consideration of the psychological disturbance being so risked by body alterations may lead to a more favorable surgical outcome through planning which encompasses the psychosocial as well as the physiological significance of the organ. Breast amputations are the most common of all amputations of external parts. Where the breast is especially prized as a beautifying or response eliciting organ, a postsurgical depression may follow its removal. Renneker and Cutler[14] have emphasized acquainting the breast cancer patient with the realistic facts concerning breast cancer as a means of making the woman aware of the real danger of life and to press the urgency of immediate action rather than engage in dilatory tactics that would protect the breast. Bard and Sutherland[15] emphasize that in a group of patients studied by them, exaggerated emotional responses are *not* to be expected more frequently among younger women who have had a breast amputation than among older women. The quality of the character adaptation and the symbolic role of the breast disrupted by the surgery seems more pertinent to the reaction than the age of the patient.

Danger of having the patient respond to a successful surgical result with a negative attitude about the surgeon or the occurrence of a mental disability is emphasized. Long illnesses of any kind may permit a patient to accept a dependent relationship without loss of prestige, shame or guilt. The correction of a tubercular lesion, surgery on the heart and many orthopedic corrections leave the patient so exposed psychologically. Mitral commissurotomy and other surgical cardiac procedures have been evaluated for their psychological effects. Fox[16] pointed to the prolonged dependent adaptation to a disabling terminal disease as well as the reaction to anticipation of imminent death. Kaplan[17] found the heart to be a focal point in the personality of the patient. The adaptation to a "weak" heart involves a total style of life whose satisfactions will be deeply threatened by any potentiality of recovery from the illness. Any prolonged illness creates acceptance of dependency, and generates the feeling that aggressiveness against authority is acceptable. ("I'm sick; they won't do anything to me.") Choice of occupation, marital situation and other sociocultural activities may not as readily be acceptable to a recovered patient and thus create conflicts. Conditions requiring repeated examinations or manipulation of sexual or eroticized organs may have a prolonged influence on the defenses of rigidly moralistic persons.

Direct Influences of Surgery

There are rather obvious stresses in the surgical situation and these must be looked upon as possible precipitants of a psychotic reaction. The patient is seen as predisposed to the psychotic adaptation by his total previous experience which led to the development of characteristic patterns of perceiving feeling, thinking and behaving. Precipitants of major psychic disbalance with surgery include (1) resemblance to previous traumatic situations (previous real experiences with physicians, anesthesia, painful manipulations, postsurgical discomforts or identification symbolically with earlier traumatic life experiences with significant adults) may revive severe anxieties which join with current anxieties to arouse an acute state of anxious distress; (2) a current life situation which creates the atmosphere that the surgery

and illness are in the nature of a retaliation for past improper behavior; (3) surgery on the brain or the postsurgical biochemical disbalance may create circumstances in which the patient is unable to evaluate the external world accurately. The patient's awareness of his lack of capacity for evaluating the world around him validly or reliably creates anxiety which in turn exaggerates the inaccuracy of perception, setting up a vertiginous vicious cycle with a catastrophic end stage.

The anesthetic as a precipitant of acute anxiety stems from fears about being overpowered and made helpless, of losing control and consequently being in a state of danger, of being suffocated or strangled or becoming the helpless victim of malevolent intentions. Personalities who cannot relax control over inner impulses they perceive as dangerous, or control over the intentions of others are particularly susceptible to panic in the presence of total anesthesia. In addition, there is always the risk of a physiological balance being significantly disturbed by an additional stress to a physical state. The precariously balanced cardiac patient, the liver patient, the acutely ill individual, all are having trouble with a tenuously balanced chemical and enzymatic state. They are but a few examples of how a physiological disharmony may influence the psychological balance.

Surgery on the Regressed Psychotic

A special problem with diagnosis is experienced by the surgeon called upon to see the patient in severe schizophrenic withdrawal, depressive as well as catatonic, or during a psychotic episode. Experiences in institutions with deeply regressed patients illustrate how acute surgical conditions are completely masked by the mental disability. Arp[18] indicates how the symptoms of peritonitis may not be clearly recognizable and that shock may not be observed or reported when it is bound to be present by the very nature of the physiological pathology. Patients go on with their customary activity or inactivity up to a few hours before death without communicating a condition conventionally correctable by surgery if reported and observed.

Dramatic improvement in the mental state of a patient may be reported following on a surgical intervention. Such changes are more likely related to the psychological factors in the total setting of the surgery rather than to any specific effect of the structural or physiological alteration.

Treatment of Psychiatric Problems in The Surgical Patient

Treatment plans must take into account the frequency with which bodily reactions are produced by processes which are inherently neither physical nor chemical in the usual meaning with which we refer to physical and chemical changes. Many of the patient's symptoms may be aspects of psychophysiological stress reactions as visceral or neuromuscular tissue is affected by the social and personal conflicts and stresses of everyday life. Treatment of the surgical patient with such symptoms is based on principles which are similar for all patients plus those unique to the problem of the surgical patient.

Transference of Expectations from Past onto Present

Treatment of a patient has begun the moment he has decided to seek the help of another person. It is in the acceptance as a fact by one person that he feels in some way the need for help from another that we find the root of all medical practice. It encompasses the establishment of a relationship of dependency, and the revival of the basic attitudes experienced as a child when continuous help and succorance as a dependent was needed to maintain life and enable growth. The infant and child endow parents with God-like characteristics when they are frightened, in pain, in distress or in any way insecure. These same feelings and attitudes are transferred by the patient to the physician in adult life. These reactions may be a necessary psychological aspect of the patient's healing process but unfortunately physicians sometimes tend to accept at face value what the patient wishes to believe, especially as it implies omniscence and omnipotence. This transference toward the physician of attitudes and feelings which are pertinent to treatment are present to some degree in all interpersonal relationships whereby one person seeks and another offers help. Such attitudes and feelings include:

1. Dependency needs which are mobilized by stress of any kind and which may express themselves anywhere from a realistic dependence appropriate to the disability and with an awareness of the probability limits of a competent physician's ability to help, to varying degrees of unrealistic expectations from the physician which may go so far as to want the physician to give up all self-interest in a selfless devotion and accomplish for the patient what is beyond medical science. He literally *may* want to remain in bed with all his needs cared for, even to being fed and having bowel and bladder functions looked after by others. The dependency cravings may be relatively minor at first, like enjoying breakfast in bed on Mother's or Father's Day, but may easily be encouraged to flourish in the acceptable social role of the sick until it reaches a stage of regression which is malignant and nonreversible.

2. Denial of dependency is a defensive bravado, an ignoring of the existence of anxiety about what is happening. Such a defense may suddenly collapse in an acute panic or severe regression to the surprise of all who accepted the defense at face value. The surgical patient weakened by illness, harried by fears and anxiety, beset by the problems of his family may respond with any combination or variation of the feelings and attitudes described above.

3 Feelings of anger, resentment, etc., and open hostility may be mobilized by unrealistic expectations. The patient may see himself as being treated with a lack of consideration, less adequately than others, neglected or improperly cared for, when in fact his feelings and attitudes may be a reaction to the unrealistic expectations he has of the doctor-patient relationship.

4. Feelings of guilt may occur in response to hostile and aggressive intentions, or if he interprets his illness as a hostile or depriving act directed against friends or members of his family.

5. Erotic feelings and shame may be aroused by undressing. Examinations and expressions of interest by the physician may be interpreted as having an erotic motivation and arouse overt reactions of erotic interest, or reactive feelings of anger or shame with accompanying physiological changes and behavior.

6. Feelings of envy and jealousy occasionally interfere with the realistic doctor-patient relationship. Other patients may be getting better treatment.

The physician can put to use the expectation of being healed which the dependent person anticipates from the satisfaction of his needs in earlier experiences. A child experiences that the laying on of hands, a caress, a supporting arm around the shoulder, an attentive and sympathetic ear or a kiss, takes the hurt away or at least diminishes the pain. These healing responses are attributed by the child to the magical powers of his parents. The doctor is looked upon by the patient as a helpful parent and as such is considered a possible source of such comforting attention. The responses of approval, protection, attention, etc., are sought as a substitute for the love and affection expected from parents. Threats, punishment, disapproval are also parental activities which the patient anticipates from the physician. By being a "good patient" he diminishes the risk of punishment and disapproval and maximizes the probability of well-being. Use by the physician, however, of this type of relationship carries with it the implication that a more mature and more responsibly adequate relationship cannot be established.

The patient tends to see the many potential interventions in the armamentarium of the physician as powerful, magical controls which are used to help him. The doctor's willingness to do this is an expression not only of healing power, but also of interest, protection and love. More latent are concerns about a possible malevolent use of these powers, as in "black magic" to show anger and hate. The doctor's office, the waiting room and other elements of his first introduction to the healer are used by the patient according to such needs. If the office is unusually crowded, the doctor becomes endowed with a powerful magic. Else why do many people seek his help? If the patients are few, then much time is consumed in each one's care and he limits his practice with an unusual interest in each patient he accepts. Each item in the office is used by the patient to support what he wishes to believe about the doctor. In a positive orientation, the diplomas on every wall show how effectively trained he is. No diploma shows the humility of this great man. An ornately furnished office is proof of success and ability; simple furniture emphasizes that no special trappings are needed to enhance his stature.

Attitudes toward Emotionally Ill Patients

Emphasis on the knowledge of self, so prominent in the treatment of patients with emotional illness, needs to be reaffirmed with regard to the treatment of all patients. The physician especially needs to face maturely any too strong feelings of liking or distaste for his patients. Gerty[19] said of the physician, "In his devotion to his calling, every good physician may have to combat at times disliking the things he has to do. He must not dislike humanity, and must have some measure of charity and tolerance for its foibles, weaknesses, and prejudices." Our previous experiences contribute to the attitudes we develop toward patients, among these experiences being our medical education. Stoller and Geertsma[20] in a study of medical student attitudes found data supporting the conclusion that all the medical students they tested preferred to view the emotionally ill person from the point of view of organic pathology. Anxiety mounts as they have closer contact and responsibility for emotionally ill patients. This helps create the attitude that an organically ill patient is their idea of a desirable patient. The physician, whether he be internist, surgeon, pediatrician or psychiatrist, has the responsibility of learning about his personal attitudes, predilections and tastes in patients and illnesses so that personal and professional judgments may be more effectively harmonized.

Initial history taking immediately gives the patient an opportunity to unburden himself about his anxieties. He tells what hurts him,

of the symptoms and how they developed. In so doing, he has in a sense unloaded the responsibility for care and protection onto the physician. The very taking of the history has this psychotherapeutic implication: "I have told you and now you will cure me; reassure me, approve of how I have acted." The history gives the patient an opportunity for confession and an emotional discharge which becomes a constructive experience when it meets with an appropriate response.

The physician's social role of private neutrality prevents the patient from feeling rejected or guilty even if he is criticized and corrected in some way.

The Tools of the Examination

Stethoscope, ophthalmoscope, otoscope and fluoroscope, to mention a few, symbolize the depth and intensity of the doctor's interest in him. They reinforce the magical powers to be derived from such mysterious tools. It is easy for the patient to shift awareness of how these tools secure information into an anticipation of the magically wished-for cure. Certainly many of his everyday experiences suggest such a casual relationship. The farmer examines his soil and then adds the proper fertilizer. All becomes well. The attendant tests the radiator water, adds more antifreeze, and there is no further radiator trouble. Such experiences help the patient to quiet doubts he may have about the God-like qualities of the doctor and to fall back securely on the supposed omnipotence of the machines used by the therapist. Certainly the fluroscope, the E.K.G. machine, and the brain wave test have "cured" symptoms for every physician. The patient with severe precordial pains finds them reduced as if by magic after the E.K.G. The prescription blank has important psychological meaning for patients. Its significance may be compared to ritualistic words and acts, to the powerful symbols and taboos which are standard practices in primitive medicine. The prescription is not to be depreciated with casual indifference as a scrap of paper transmitting authority to issue certain ingredients which will help the patient on their own merits. The prescription can also heal by magical persuasion. It can represent a gift from one who is powerful to help. It may possess all the potency of a primitive ritual which is perceived to have power to drive away evil and illness. It therefore represents more than the contents of a bottle, a capsule, and the mechanical alteration of the patient's physiology for good.

There is a negative aspect to all of the factors that have been described in positive terms. Negative feelings about all these items are also expressed by patients within the experience of every physician. Patients find fault with impeccable offices, with competent examinations. The tools may do damage during the examination, and lack of favorable response to drugs may lead to suits for attempted poisoning via prescriptions which are sent to a fellow conspiring pharmacist. The patient is again reacting with the assumption that he is being treated in a manner similar to that which he experienced earlier in life. He had reason to develop basic distrust about the character and motives of his parents. How can he therefore think better of persons who represent authority figures?

The psychological effects of surgical procedures need a good deal of consideration from this frame of reference. The intimate relationship of the surgeon and his patient often reaches a degree of trust in which the sublime attributes of a healing and forgiving savior are vested in the surgeon. Rendering the patient unconscious and restoring him to life and health, the precarious state of life after surgery through which the patient is cared for and nursed back to well-being constitute a psychological configuration of paramount significance. The phenomenon of restoration of well-being through having suffered is of unique significance. God and man both exact a period of suffering, of punishment and expiation before one can feel totally relieved of guilt or cleansed of sin. A patient may come to a doctor's office complaining of "not feeling right standing on my legs all day with varicose veins." She complains of headaches, dizziness, generalized weakness and goes to surgery. She gets her veins ligated and no longer has headaches, dizziness, generalized weakness. She tells the physician how wonderful the results have been. The surgeon is puzzled for what she reports makes no physiological sense. Possibly, he might find an explanation if he explores the patient's feeling of retribution for her misdeeds. Some patients are "punishment addicts." Like insecure guilt ridden children they continuously provoke parents into giving them a good whipping after which they re-establish a good relationship and feel entitled to love and well-being. So are there patients who strive to experience surgical procedures which will free them for love at the price of pain and expiation. An awareness of this phenomenon prevents the physician from attributing improved well-being to factors which may not play a significant role.

The reassuring statement is a principal psychotherapeutic tool of the physician. The patient suffering from an idea that his cough is due to a cancer of the lung, that his precordial pain represents the onset of a coronary occlusion or that a painful abdomen comes from an acute appendix seeks the reassuring words of the man who has the know-how in these matters. Much

more confidence may be placed on this know-how than is warranted because the patient's infantile and dependent needs have been mobilized. The physician who appreciates the specific phobic concern behind every request for reassurance, and helps the patient to put this anxiety into words has an advantage he can put to use for the patient's well-being. By then specifically emphasizing his not having found any heart condition or cancer or whatever other somatic disintegration haunts the mind, the physician becomes doubly reassuring. The patient is impressed by the insight the physician has about his fears, and is therefore more deeply impressed by this reassurance. A patient who has succeeded in hiding from the doctor his fear that he has a cancer of the stomach awaits the doctor's decision. If he says, "I find you completely well" or "there is nothing wrong with your health," he has not been as effective as he might have been. He can also accomplish something psychotherapeutically by being able to say: "I have examined you completely; I paid a good deal of attention to your stomach symptoms and examined everything about the stomach in detail. I can definitely tell you that there is absolutely no evidence that you have a cancer of the stomach or any other disease in the abdomen. The fears you have mentioned are unfounded."

Listening, ventilation, abreaction and confession constitute a constant element in all visits to the doctor. Regrettably, physicians as a group are more anxious to talk and tell than to listen. Listening does require a high degree of restraint and involves deferring to the patient. Troubled by impulses held in tenuous repression, impulses frequently laden with guilt or shame, the patient expects the doctor to be forgiving and reassuring, or threatening. He often gets neither, nor has he an opportunity to ventilate his feelings. Too often he is shut off by the doctor who may already have had his fill of listening for one day. Listening is a trait worth cultivating.

Guilt feelings are ubiquitous with humans. Many patients come to the doctor for the many somatic symptoms which accompany their guilty sentiments. Often the pain in the back or the precordial distress or the muscle soreness is relieved when the patient has had an opportunity to discharge guilty emotions in the permissive aura surrounding an understanding doctor whose life experiences have taught him to take a benign view of many activities and sentiments about which humans unnecessarily experience guilt. The acceptance of the patient's hostility without retaliation when he complains about the length of time he has waited or the price of his shot might be more valuable to the patient than the shots he had received. Possibly a statement that, "You are angry with me about waiting, let's talk it over," might be of some therapeutic value. The statement, "If you don't like what I am doing for you, find another doctor," might lead to a clinging dependence with more symptoms than ever before as guilt over resentment of the doctor is added to other guilts. Or the patient finds another doctor, leaving behind another hated person to be feared without real benefit to any of the principals involved.

Sedatives

Alterations of states of awareness characterize the sedative drugs. The importance of utilizing significant amounts of the drug to produce a state of tranquillity, drowsiness or deep sleep needs emphasis. The surgeon is constantly troubled by disturbed tissue chemical and fluid equilibrium calling for a cautious use of sedatives. However, anxious patients, emotionally stimulated patients, it should be remembered, require a somewhat greater dosage than is customarily administered. Rather free use of effective doses of drugs for sleep on nights prior to elective surgery is helpful. For the very anxious patient, not to give enough may produce the undesirable effect of a state of semisleep with terrifying dreams.

A suggested dosage for the patient having difficulty falling asleep would be pentobarbital 200 mgm; for the patient who wakes after four hours of sleep, amobarbital sodium 200 to 400 mgm.

The so-called tranquilizers are effective in minimizing anxiety with less sleep inducing effect, and may be particularly valuable when deep sleep is better avoided but anxiety nevertheless needs to be controlled.

	Int. Dose	*Repeat*	*Frequency*
(Thorazine) Chlorpromazine	25 mgm	50-200 mgm	4-6 hrs.
(Sparine) Promazine	25-50 mgm	50-200 mgm	4-6 hrs.
(Compazine) Prochlorperazine	10-20 mgm	10-20 mgm	4-6 hrs.
(Serpasil) Reserpine	1 mgm	2.5-5 mgm	4-6 hrs.
(Trilafon) Perphenazine	2-8 mgm doses are used		4-6 hrs.
(Miltown) Meprobomate	400-800 mgm	may be given qid.	4-6 hrs.
(Vesprin) Trifluprom azine Hydrochloride	10-25 mgm	25 mgm	4-6 hrs.

The hypotensive effect of tranquilizers in larger doses and the gastric secretion stimulation of reserpine must be kept in mind. Extra pyramidal symptoms appear with prolonged usage of these drugs. Small doses of barbiturates, or bromides, during the day for diminishing anxiety have not been found to be inferior to the so-called tranquilizers but will more often produce drowsiness. Such side effects may interfere with effective functioning during the day.

Treatment for Postoperative Psychotic States

Management of the patient who has a psychotic breakdown in the postoperative period can vary from relatively simple environmental manipulation to rather extensive physical and psychotherapeutic measures.

The patient who develops states of disorganization in which memory loss, disorientation and defects in judgment tend to dominate the clinical picture often shows some evidence of beginning difficulty by mistakes in identifying people, or becoming disoriented for time, place and person even in some minor degree. As soon as such prodromal signs appear, the patient must be so treated as to bring about an optimal degree of contact with the people around him. During the day, the patient should be constantly engaged in interpersonal contacts and communications. Identification of persons, time and places should be made as often as possible, and details of recent events should be talked about as often as possible. All the personnel should be encouraged to communicate frequently with the patient during the day. Early visiting by responsible persons in the family and by friends and relatives to whom the patient feels close should be arranged. Instructions that they orient the patient and avoid any overt show of anxiety or concern about defects in memory or judgment would be a valuable asset. A maximum degree of physiological balance in all areas of functioning should be obtained as early as is feasible. Since physiological balance of the individual may be seriously impaired by the overuse of narcotics and sedatives, a minimum amount of drugs should be used during the day. The tranquilizer group which less seriously affect the patient's ability to perceive and integrate may be substituted for barbiturates and narcotics. When impending signs of mental decomposition begin to appear, if the patient is physically capable, motor activity should be encouraged especially for the individual who finds "bed rest" an uncomfortable experience. An occupational therapist might be a very useful person in stimulating the patient to retain and develop his tenuous contact with the environment. During the night, the lights in the room should be on if possible, and frequent short periods of conversation with personnel should be encouraged when the patient is awake. When ordering night medication, it is preferable to give none than to give small doses of sedatives which may produce a dream-like state instead of good sound sleep. Sodium amytal 0.4 gms (6 grs); seconal 0.2 gms (3 grs); or phenobarbital in .14 gms (2 to 3 grs) doses, repeated during the night, should be used when the physical state permits. The night setting with its relative quiet, shadows, darkness and infrequent stimulation is a real danger period for the borderline psychotic patient. When restraints become necessary because of an unusual degree of hyperactivity, it is good to have a substantial amount of help available. A rapid but quiet, firm and painless overcoming of patient resistance minimizes struggle and resentment with all the psychological damage this entails. Obviously overwhelming power available to enforce what is required for the patient's good enhances the need to comply. An explanation of why the restraints, emphasizing their positive value for the patient should be given even if the patient seems to have become completely disorganized.

Severe depressions in the postoperative period characterized by feelings of helplessness, a pessimistic outlook for the future, refusal to eat and indifference to bowel and bladder control may be preceded by the prodromal state of a too slow return of appetite after the surgical procedure. Expressions of apathy, indifference, and a withdrawal into the relative silence of a morose noncomplaining may presage danger, or even a suicidal attempt. Beware of the patient whom the nurse describes as "Such a good patient! Doesn't ask for a thing and doesn't bother anyone." The patient may have withdrawn into contemplation of a suicidal attempt after ruminating about no one really caring whether he lives or dies, or that his condition is hopeless and no one wishes to tell him so. Overworking the ebullient, light, cheery, "Is everybody happy?" attitude, and repeated expressions such as "You haven't a thing to worry about; just pull yourself together," rarely accomplish their intent. The patient already feels inferior, unloved or uncared for. He has become hopeless. This will be further accentuated if he finds that the surgeon does not appreciate his state of mind; indeed, does not know what it is. Taking the time to sit down at a bedside instead of standing, as in a hurry, is important at such a point. To encourage the patient to ventilate such feelings gives him evidence that the surgeon values him and ascribes to him status and worth. If an inkling exists of the contemplation of suicide, early psychiatric consultation is desirable. The patient's relatives must be appraised of the danger. If consultation is refused, a record of the rejection is an essential protection for the hospital and the doctor. In the absence of consultation, the use of small doses of insulin, if the physical state does not contraindicate, may sufficiently stimulate appetite so that a change from a state of apathy is encouraged. The desire to eat and some enjoyment of food lends a new, more hopeful tinge to the atmosphere. Use of so-called energizers, dexedrine, desoxyn, ritalin, marsilid and others, are preferably given in the

morning and noon. Drugs to relieve anxiety and tension may then be given in the afternoon and evening, and good sized doses of long acting sedatives may be administered at bedtime. Many patients with anxiety and depression wake in the early dawn. For them drugs like nembutal and other short acting barbituates are not as effective as phenobarbital or sodium amytal. Electric shock therapy may be initiated if the postsurgical condition of the patient does not mitigate against its use, if the depression is deepening or if suicidal impulses are definitely in evidence. If such therapy is not available in the hospital, transfer to a unit where this is available takes precedence once the surgeon believes that the depth of the depression, or the suicidal risk make his care of the patient secondary in importance. Whether a patient is only mildly or deeply depressed, the surgeon can still use as a lever the prestige he has acquired with the patient, and the confidence and obligation the patient feels toward him, to increase feelings of hope for the morrow, and the helpful possibilities in seeing someone the next day. That he is an interest and responsibility of the surgeon is proven by setting aside a specific span of time for visits each day, and by personally notifying the waiting patient by telephone or message if a visit is delayed or missed because of some unanticipated, uncontrollable intervention. For instance, the visit to the apathetic and depressed patient is best ended with, "I will see you tomorrow before 11 a.m." (providing that the time set is probable of fulfillment). "I will not get to see you Sunday of this week, but I will definitely be in Monday before lunch."

Many steps are possible to increase preventive safeguards against the hazards of suicide if a patient cannot be moved to a proper psychiatric facility. An essential facility in every surgical section is a room readily visible from the nursing station with a safety screen on the window. It is a bitter blow for the surgeon whose skill has saved a life, to find it snuffed out a few days later on the pavement in front of the hospital.

Manic reactions in which a state of euphoria is experienced by the patient become an occasional problem. An elevated sense of what can be accomplished and a megalomaniacal concept of ability to recover and get along without further help comes as a more obvious manifestation. A stern, firm attitude without giving the patient the feeling that his thoughts and reactions are considered ridiculous or do not warrant a serious attitude on the part of the surgeon is important. Large doses of tranquilizers or enough sedatives to keep the patient in a moderately deep sleep will carry him through the postoperative course. One may have to weigh the various risks, and consider the use of electroshock if the postsurgical state permits. The use of drugs which act at the motor end plate to minimize the muscular reactions during electroshock have increased the potentialities for such therapy in the postsurgical period.

The schizophrenic individual may develop a degree of irrationality, paranoia, mutism and negativism which seriously impairs postoperative recovery. Rapid evaluation for possible self-destructive actions or hostile aggressivity becomes imperative. The patient must be controlled as soon as possible and with a minimum amount of feeling afraid, angered or disgusted. It is preferable to attempt restraint on a patient only when it can be done with firm assurance of success. When the patient doesn't seem quite right and is picking on a bandage, the physician may order restraints in his hearing, may admonish him to desist or may attempt to restrain him alone or with the help of a nurse. Such abortive attempts may be like throwing water on white hot coals. If restraints are needed for a potentially explosive patient as many people as can be mustered on the floor are marshalled. The patient is thus approached with firmness, with kindness and with massive supporting power as he is being told that what is being done must be done. In words appropriate to the patient's understanding he is assured he will feel better knowing he won't have to be concerned about hurting himself, or doing anything he might afterwards regret. Once the patient is safely in restraints, determination can be made of the length and depth of sedation to overcome successfully the acute postoperative problems. Although a disturbed patient may not be in communication, a good deal of his perceptual, integrative and expressive functions remain unimpaired. As in the presence of efficiently communicating patients, one would not want to make depreciatory remarks about him as a totally irrational being. Regardless of response, the management of choice is to deal with him as though he comprehends and responds sensibly. While one may frequently be disappointed in the response, positive reactions appear often enough to be gratifying. An example of the kind of noxious exposures that occur too frequently are: "He went off his noodle last night and we had to tie him down. Let's take the dressings off, and see if the incision is o.k." A more therapeutic situation might be as follows: The surgeon walks to the head of the bed of the seemingly out of contact patient, "How are you today? That was too bad about yesterday. I know you don't like these restraints but they are sparing you a worse time. Dr. Smith and I are going to take a look under the dressings." If no psychiatric help is available, and the sur-

geon must continue on alone with care until the postsurgical period is no longer a problem, enough contact with the patient should be developed to communicate that development back just as soon as there is a return to self-control, and of behavior that minimizes the probability of postsurgical problems. The quality of contact suggested above may enable the surgeon to elicit a cooperative relationship with the patient who can then be carried more securely through the postsurgical period with safety. When care is continued by the surgeon without psychiatric collaboration and the patient remains irrational and difficult to manage, sufficient sedation can maintain an almost constant state of sleep through the period of danger. Tranquilizers in potent doses intramuscularly can keep such a patient in a state of quiescence with benefit to his condition and to the surgeon's state of mind as well.

Mute and negativistic patients may flare up into acute aggression. They then need to be treated as suggested for the acute schizophrenic reaction. During states of negativism with refusal to eat, changes in fluid and nutritional balance may require emergency care. A mild hypoglycemic state induced by a small dose of insulin may create the desire to eat and restore a reasonable state of communication with the physician. This will prevent the need for more drastic measures. Intensive psychotherapy, or shock therapy if the postsurgical state warrants, or tube feeding may become necessary if not contraindicated by the surgical state. Continuous maintenance of communication with the patient as if he were able to understand and respond to rational conversation is important.

Summary

The postoperative psychiatric disturbance represents a breakdown of psychosocial homeostasis in a stressful life situation. There is no "postoperative psychosis." Reactions to the traumatic experience of surgery are determined by the previous personality state of the patient and the relationship of the current stressful situation to patterns of previous traumatic conditionings. Any psychiatrically disordered reaction may thus ensue from the experience of surgery.

Treatment is directed at controlling disequilibrium through restoration of the physiological balance, an avoidance of agents and circumstances which create further psychological disorganization, or disequilibrium, and by an intensification of that personal interaction between doctor and patient as will create the deepest feeling of confidence in the doctor, and cultivate the greatest assurance that help, understanding and a return of self-control will take place.

References

1. Christopher, F.: *Minor Surgery*, Philadelphia, W. B. Saunders Co., 1937.

2. Titchener, J. L., Zwerling, I., Gottschalk, L., Levine, M., Culbertson, W., Cohen, S., and Selven, H.: Psychosis in Surgical Patients, *AMA Archives, Sur., Gynec. and Obst.*, 102: 59, 1956.

3. Noyes, A.: *Modern Clinical Psychiatry*, Philadelphia, W. B. Saunders Co., 1948, 3rd edition.

4. Ulett, C. and Gildea, A.: Survey of Surgical Procedures in Psychoneurotic Women, *J.A.M.A.*, 143:960, July 15, 1950.

5. Mann, J. P., Bollman, J. J., Huizenga, K. A., Farrar, T., and Grindly, J. H.: Blood Ammonia Experimental and Clinical Studies in Abnormality of the Liver and Portal Circulation, *Gastroenterology*, 27:399, 1954.

6. Bessman, S. P., and Bessman, A. N.: The Cerebral and Peripheral Uptake of Ammonia in Liver Disease, with an Hypothesis for the Mechanism for Hepatic Coma, *J. Clin. Invest.*, 34:622, 1955.

7. Masserman, J. H.: *Principles of Dynamic Psychiatry*, Philadelphia, W. B. Saunders Co., 1946.

8. Menninger, K. A.: Polysurgery and Polysurgical Addiction, *Psychoanalytic Quart.* 3:173, 1934.

9. Gliebe, P. A. and Goldman, L.: Persistent Self-Mutilation Following a Surgical Procedure, *Calif. Med.*, 70:117, Feb. 1948.

10. Witt, G. F. and Cheavens, T. H.: Psychiatric Contraindications to Surgery, *Texas State J. Med.*, 35:681, Feb. 1940.

11. Barker, R., ed.: *Adjustment to Physical Handicap and Illnesses*: A Survey of the Social Psychology of Physical Disability, Social Science Research Council, 1953.

12. MacGregor, F. C.: Some Psycho-social Problems Associated with Facial Deformities, *Am. Soc. Rev.*, 16:629, 1951.

13. Palmer, A., and Blanton, S.: Mental Factors in Relation to Reconstructive Surgery of the Nose and Ears, *A.M.A. Archives Otolaryng.*, 56:148, August, 1952.

14. Fox, H. M., Rizzo, N. D., and Gifford, S.: Psychological Observations of Patients Undergoing Mitral Surgery: A Study of Stress, *Psychosomat. Medicine*, 16:186, 1954.

15. Bard, M., and Sutherland, A. M.: Psychologic Impact of Cancer and its Treatment; IV. Adaption of Radical Mastectomy, *Cancer*, 8:656, July-August, 1955.

16. Renneker, R., and Cutler, M.: Psychological Problems of Adjustment to Cancer of the Breast, *J.A.M.A.*, 148:833, 1952.

17. Kaplan, S. M.: Psychological Aspects of Cardiac Disease: A Study of Patients Experiencing Mitral Commissurotomy, *Psychosomat. Medicine*, 18:221, 1956.

18. Arp, L. C., and Arp, H. A.: Surgery in the Mentally Ill, *Med. J.*, 77:349, April, 1940.

19. Gerty, F.: *Chicago Med. Soc. Bull.*, 52:447, December 25, 1954.

20. Stoller, R. J., and Geerstma, R. H.: Measurement of Medical Students' Acceptance of Emotionally Ill Patients, *Jour. of Med. Educ.* 33:585, August, 1958.

Symptomatic Treatment for

Upper Respiratory Infections

• ROBERT E. STELLER, M.D.
• EDGAR A. DeMAR, M.D.
• FRANCIS R. SCHWARTZ, M.D.
Medical Department, United Air Lines
San Francisco

Report of a study in which a long acting antihistamine-decongestant combination was used in the treatment of a variety of respiratory infections.

Treatment for upper respiratory infections has been for the most part discouraging and incomplete. Statistics show that respiratory illness is the major cause of absenteeism in and out of industry, far outnumbering injuries as a cause of lost manhours.[1] Our efforts in an industrial practice have been aimed not only at keeping the man on the job but, by effective relief of symptoms, increasing his productive effort and sense of well-being while at work.

Many authors have confirmed the effectiveness of antihistamine therapy for respiratory infections, especially in their early phases, whether infectious or allergenic in origin. More recently oral decongestants alone and in combination with antihistamines have added to this over-all effectiveness.[2,3] In this study a preparation containing two antihistamines (prophenpyridamine and pyrilamine) and a sympathomimetic amine (phenylephrine) developed in a new chemical form — their tannate salts® — was employed to treat upper respiratory symptoms of employees at work. This preparation applies an oral repository technique (the Durabond principle).[4,5]

One hundred seventy-five employees, except three, having some form of respiratory illness were studied to measure their response to this long-acting antihistamine-decongestant combination. Patients with an obvious bacterial infection requiring antibiotic therapy and those receiving treatment other than that prescribed here were excluded from this study series to evaluate more accurately singular effects.

®The trade name of Irwin, Neisler & Co. for the antihistamine combination of Phenylephrine tannate, Prophenpyridamine tannate and Pyrilamine tannate is Rynatan.

Clinical Studies

In our series, more than half the patients studied had what is commonly diagnosed as an upper respiratory infection. The remaining diagnoses are included in Table I.

TABLE I.
DIAGNOSIS

Diagnosis	No.
U. R. I. (Acute coryza)	93
Allergic Rhinitis	31
Sinusitis, subacute	19
Sinusitis, chronic	2
Aerotitis	7
Bronchitis	6
Laryngitis	5
Serous Otitis media	6
Asthma, subacute	3
Contact dermatitis	2
Insect bites	1
TOTAL CASES	175

Twenty-eight (16%) of those evaluated were women. Forty-three percent of the patients were in the 31-40 age group as shown in Table II.

TABLE II.
DISTRIBUTION OF PATIENTS BY AGE

Age Group	No.
15-20 (18-20)	6
21-25	19
26-30	35
31-40	75 - (42.8%)
41-50	30
51-60	8
61-70	2
TOTAL	175

Of the 175 patients, all but nine were placed on a twice-a-day (every 12 hours) dosage schedule. Table III indicates their response.

TABLE III.
RESPONSE TO MEDICATION

Response	No.	%		
Excellent	50	28.6	73.2%	89.7% benefited
Good	78	44.6		
Fair	29	16.5		
Poor	18	10.3		

The effectiveness of treatment was determined by immediate and prolonged response as well as comparison of symptoms before and after interruption or termination of treatment. In no case were symptoms aggravated by therapy. Many patients related effectiveness by comparing this present medication to various previously prescribed drugs and combinations. An attempt was made in all cases to evaluate therapy as regards real improvement with respect to relief of headache, nasal discharge, sneezing and congestion of the respiratory tree, as well as ability to remain at work, improvement of work performance and the subjective effect of overall well-being.

Of the cases in this series, 83% reported an eight to 12 hour duration of effect with 70% of the total reporting continuous relief of symptoms while on a b.i.d. dosage schedule. The 10% of patients who reported a "poor" response similarly did not show the usual prolonged relief and more often noted side effects.

Side Effects

The side effects noted seemed typical, to a modified degree, of antihistaminic and sympathomimetic effect. Kile,[6] in using the agent under discussion for pruritic dermatoses, reported a side effect incidence of 2.2%, the sedative effect being almost half of this incidence; the other subjective observation was dry mouth. In our series, 27 patients, on questioning, reported response other than the agent's expected decongestant action. Of these reported effects, most were mild except in two patients who complained of excessive drowsiness. Nine others experienced mild to moderate drowsiness and eight reported mild dizziness. Four patients noted drying of the mouth, two a mild to moderate nervousness and one a gastrointestinal upset. This latter patient experienced urgency of the bowel and bladder within 15 minutes after taking the tabule. When asymptomatic, this patient was given a repeat course of medication without recurrence of untoward effect.

Whether some of these mild reported reactions are true side effects or symptoms of the disease process itself is difficult to ascertain. One would expect to find symptoms of drowsiness and lightheadedness as a part of a U.R.I. syndrome. In a few instances, on subsequent dosage after the illness had subsided, those who previously complained of side effects did not notice the same reaction when they were asymptomatic.

In no case did we note any toxicity to treatment in the therapeutic doses prescribed.

Comment

The inherent difficulty of evaluating any drug on the basis of clinical observation in improvement of subjective complaints was apparent during this study. This was particularly noted in the evaluation of side effects, whether as a part of the disease syndrome or as a result of the drug itself. However, we felt the objective improvement was such that this antihistamine-decongestant shortened the duration of illness from respiratory infection and provided relief of symptoms due to rhinorrhea, sneezing, postnasal drip, headache and generalized congestion.

This paper is not meant to imply that antihistamines alone or in combination with decongestants are a specific control for the common cold, especially in an industrial practice. Proper protection against communicability, immunization or desensitizations, where practical, and the effect of the sick patient on his fellow employees must be kept foremost in the medical management of any disease. However, it has been found that patients having various manifestations of what is usually referred to as the common cold can be kept at work, with greater comfort and increased productivity, by the use of an effective, long-acting decongestant.

Summary

This study relates to a long acting antihistamine-decongestant combination in the treatment of a variety of respiratory infections by providing relief of symptoms for 90% of 175 cases with a low frequency of side effects. The onset of action was prompt and this early relief of symptoms provided a favorable influence on the patient as a whole.

Bibliography

1. SHEPARD, W. P.: *Essentials of Public Health*, ed. 2. Philadelphia, J. B. Lippincott Company, 1952, p. 412.

2. GOODMAN, L. S. AND GILMAN, A.: *The Pharmacological Basis of Therapeutics*, ed. 2. New York, The Macmillan Company, 1955, p. 662.

3. BECKMAN, H.: *Drugs, Their Nature, Action and Use*. Philadelphia, W. B. Saunders Company, 1958, p. 453.

4. CAVALLITO, C. J., AND JEWELL, R.: Modification of Rates of Gastrointestinal Absorption of Drugs. *J. A. Pharm. A., Scientific Ed.*, 47:165 (Mar.) 1958.

5. Editorial: Report on a New Respiratory Principle. *Med. Sci.*, 3:376, (Mar. 25) 1958.

6. KILE, R. L.: Oral Treatment of Pruritis Dermatoses with a New Antihistaminic Compound. *Antibiotic Med. & Clin. Therapy*, 5:578 (Sept.) 1958.

EXPERIMENTAL THERMAL BURNS

• B. ROVATTI, M.D. and
• R. J. BRENNAN, M.D.

A comparative study of the immediate and delayed histopathological changes of the skin in untreated and treated thermal burns.

It is well known that approximately one week after a minor thermal burn, an eschar begins to separate. However, there is little if any description in the literature of the successive microscopic changes as they develop during the first 48 hours. The extent of the damage ordinarily is determined at the time of injury. Our study of the timing of subsequent histopathological changes in the early hours and days following thermal burns suggests that early medical treatment could modify some of these early changes and prevent some of the later changes.

The purpose of this study was to determine, with serial biopsies, the progressive skin changes in thermal burns from the time of burning to the end of the pathological and healing process. The available literature primarily is concerned with the terminal effects of burns without particular study of the timing and characteristics of the early histopathological changes. This is reflected in the common classification of burns. According to the general classifications, first degree burns involve the epidermis, dissecting mostly the outer layers with vesication, hyperemia and slight edema of the dermis. Second degree burns more seriously involve the dermis with damage to the capillaries, hair follicles and sweat glands, with considerable edema of the dermis. In third degree burns the damage involves the entire thickness of the skin.

The process of gradual formation of the eschar has been followed in these experiments, examining the gross and microscopic changes step by step after establishing a definite procedure to provide (1) a controlled procedure of burning, (2) a close examination of the initial damage to the skin structures, (3) the timing of subsequent histopathological changes in the early hours and days following burning, (4) an insight into factors to be corrected and possibly prevented by the early treatment of thermal burns and (5) a uniform method to evaluate the efficacy of early therapeutic measures.

This work has been done at the laboratories of Viamax, Inc., Miami, Florida.

Experimental Procedure

Albino rabbits weighing six to seven pounds were kept on a standard diet to assure a homogeneous group. In this preliminary experiment six animals were then selected and the skin of the back was epilated over four by four cm area 24 hours before producing a thermal burn. The burning instrument was a steel plate 43 mm in diameter, four mm thick, with a steel handle measuring 12 cm in length and nine mm in diameter arising from the center. The handle was insulated with glass wool. To heat the instrument, a propane gas reducing flame 25 mm long was used. The plate was held at the tip of the reducing flame for one minute. Between successive burns the plate was immersed in water until cooled to touch. The heated plate was applied to the unanesthetized skin for two seconds using slight pressure to assure contact of the entire burning surface of the plate to the epilated skin. All animals thus received identical burns—and on two sides. Biopsy specimens were taken from the burned areas at intervals of one-half hour, one hour, two hours, six hours, 24 hours, 48 hours, four days, six days, 10 days, 12 days, 14 days, 18 days, 25 days, 29 days and 35 days, which was grossly the end of the pathological process.

Experimental Findings in the Untreated Group

When no treatment was given, immediately after the burning, the skin appeared greyish-white with smooth edges. In the first six hours the color remained the same but the burned area became diffusely edematous with slight elevation of the edges. After 24 hours the burned area was brownish and the surrounding unburned skin appeared erythematous. After 48 hours the burned area was dry and brown and the surrounding unburned skin was markedly congested. During the following days the ther-

Figure 1

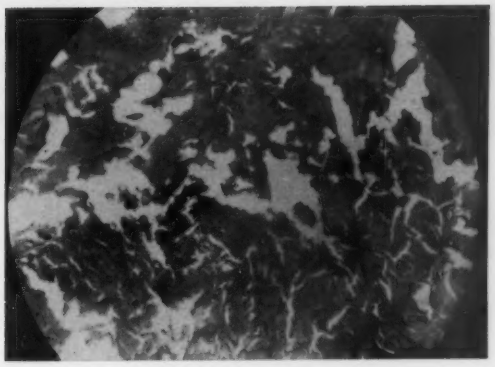


Figure 2

mally injured skin became dryer and harder until, on the tenth day, the edges began to curl and dissect from the underlying tissue. The complete eschar separated on the thirteenth or fourteenth day. The burned areas in all animals were healed by firm, pearl white adherent scars by the twenty-ninth day.

The microscopic examination of the histopathological changes showed that during the first 30 minutes after the burning the epidermis became partially dissected and the upper layers of the dermis showed diffuse thermal coagulation. Red thrombi were found in the deeper layers of the dermis, while a perivascular inflammatory reaction began to develop (Figure 1). Numerous spaces retaining fluid, following thermal coagulation and development of edema were present in the dermis after one hour. After two hours there was evidence of severe damage of the follicular structures, while numerous thrombosed capillaries were present in the dermis. After six hours the entire dermis appeared markedly dehydrated and numerous round cells infiltrated the deep dermis. After 24 hours the coagulated upper layers of the dermis tended to dissect in a large eschar from the deeper layers of the dermis where a marked inflammatory reaction was present (Figure 2). After 48 hours the process of dissection of the upper layers of the dermis was definitely more advanced than after 24 hours. At this time the deeper layers of the dermis showed polymorphonuclear infiltration, microscopic debridement and in some areas entire loss of structure. Microscopically at four days the eschar formed by the upper layers of the dermis was entirely separated and showed a patchy irregular staining. After six days the deep dermis showed a loose structure with abundant perivascular infiltration and numerous capillary thrombi. At 10 and 12 days the fragments of amorphous material arising from the thermally damaged dermis were invaded by an abundance of leukocytes, the picture being partly one of dry necrosis of the eschar and partly one of microscopic colliquation and softening of the deep dermis. After 14 days the appearance of the dermis was that of an arborescent structure of dissociated collagen branches undergoing partial autolysis (Figure 3). After 18 days the image of arborization markedly changed, owing to a process of small fragmentation in which the tissue lost structure and stainability and underwent a process of debridement (Figure 4).

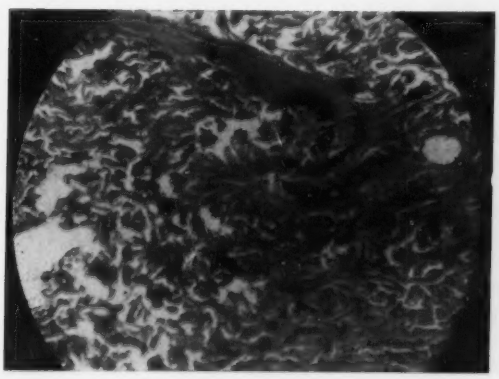


Figure 3

Figure 4

Preliminary Experiments on Medications

In our experiments on untreated thermal burns, gross and microscopic observations showed that the eschar forms and separates microscopically in 24 to 48 hours and the eschar separates grossly in 10 to 14 days. We therefore undertook a comparative study of the effectiveness of various methods of early medical treatment using several medications and the previously established controlled procedure of burning. Preliminary research work done by us on identical burns following the same method and procedure showed that aloe vera gel alone was not well suited for continuous dressing of the thermally injured skin and an ointment consisting of lanolin base alone was not effective in the treatment of these experimental burns. Preparations of aloe vera gel and lanolin base and preparations in lanolin base of aloe vera gel and a synthetic protecting and stabilizing colloid compound (preparation S) were tested for effectiveness following the same procedure. The ointment, consisting of aloe vera gel, preparation S. 30% in a specially prepared bland ointment base with 5% lanolin, used in Groups I and II of the following comparative experiments, was found to be the most effective in preventing the formation of the microscopic eschar.

Experimental Procedure in the Treated Groups

Twelve albino rabbits were selected for experiments with various medications and divided into four groups of three animals each. The skin of the back of each animal was epilated on both sides over a four by four cm area. Each animal was burned for two seconds on both epilated areas using the previously described steel plate with our controlled heating procedure. Each animal was treated on one side only. The other burned area served as a control and was thus available for gross and microscopic comparison. Biopsy specimens were taken from all burned areas at intervals of one-half hour, one hour, two hours, six hours, 24 hours, 48 hours, four days, six days, 10 days, etc., as in the previous experiments.

The first group was treated with Alo-Creme Ointment.* The second group was treated with Alo-Creme Ointment containing, in addition to the above mentioned components, 5% cystine. The third group was treated with 1% trinitrophenol butylaminobenzoate ointment. The fourth group was treated with petrolatum and gauze dressing. In every case the ointment was applied immediately after burning and twice daily thereafter.

*Alo-Creme Ointment manufactured by Alo-Creme Laboratories, Fort Lauderdale, Florida.

Experimental Findings in the Treated Groups

Group I—Treated with Alo-Creme Ointment: Six hours after burning, the treated area was greyish-white and edematous. After 24 hours, the treated area was more pliable than the untreated area of the same animal. There was definitely less erythema around the treated burned area than there was around the untreated control area. After 48 hours the untreated area was brown and definitely dryer than the burned area treated with Alo-Creme Ointment. During the following days the treated area remained soft and pliable while the untreated area became harder and dryer. Between the seventh and the fifteenth day, there was slight and continuous superficial debridement of the treated area without gross formation of an eschar, while after two weeks the untreated area showed a large eschar which gradually separated from the underlying tissue. The Alo-Creme treated lesions healed in two weeks without gross evidence of scarring. By the end of the fourth week, the untreated area of the same animal healed with a firm pearly-white scar.

Group II—Treated with Alo-Creme Ointment containing 5% cystine: During the first week the treated areas were similar to the treated areas of Group I. In the second week the debridement appeared to be greater in Group II than in Group I. The healing process took place without formation of a gross eschar and by the third week the treated areas gradually became softer, more pliable and less edematous.

Group III—Treated with 1% trinitrophenol aminobenzoate ointment: At 24 hours the treated areas were grossly similar to those of Groups I and II. During the next 48 hours the treated area became soft and edematous while the surrounding skin became markedly congested. At the end of the first week the periphery of the treated area showed multiple petechial hemorrhages while the center became white and gelatinous. There was a gradual worsening of the general condition of these animals and none survived the tenth day. Gross and microscopic hemorrhages of the liver and kidneys were found at autopsy.

Group IV—Treated with petrolatum and gauze: During the first three days there was a gradual development of congestion, edema and focal hemorrhages. By the end of the first week the treated area had gradually changed from greyish-white to brown. At this time there were several small abscesses in the skin. During the second week a purulent eschar separated leaving granulation tissue. By the end of the fourth week the treated area healed by the formation of a firm pearly-white scar similar to that of the untreated area of the same animal.

Figure 5

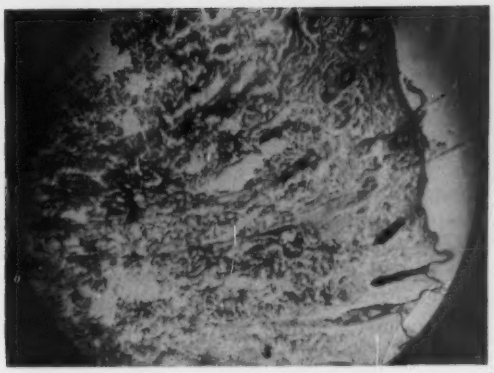


Figure 6

Histopathological Changes in Treated Animals

Group I: Thirty minutes after burn and treatment with Alo-Creme Ointment the epidermis was almost entirely missing and, where still present, formed several vesicles. The upper dermis did not stain as darkly as in the controls. There was no definite perivascular reaction and there were no thrombi evident in the deep dermis (Figure 5). A diffuse edema developed within an hour and a few isolated areas of perivascular reaction were present in the deep dermis at this time. After two hours the dermis showed a slight thermal coagulation as indicated by the stainability of tissue, while in the deep layers of it numerous capillaries appeared congested. At six hours there was not such evidence of dehydration of the dermis as in the controls. The framework of the collagen fibers showed edema.

After 24 hours there was little evidence of thermal necrosis of the upper dermis and there was no indication that the upper layer of the dermis would dissect from the deeper layers forming an eschar as in the controls and in the untreated animals. At this time the perivascular infiltration was marked and diffuse (Figure 6).

After two days the superficial dermis showed moderate infiltration with polymorphonuclear leucocytes and diffuse congestion and edema. There were no areas of focal necrosis found within the dermis. A slight debridement of the superficial dermis was evident at four days while the texture of the deep dermis was well preserved and the collagen fibers appeared practically normal. The capillaries were free from thrombi. After six days the epidermis showed regeneration from the basal layers in some areas. There was no evidence of thrombosis or necrotic dissection in the dermis. After 10 days the thermally injured dermis still showed some superficial debridement; the fibroblastic activity was increased in all layers of the dermis and numerous vessels showed perivascular round cells infiltration. Active epithelial regeneration was more evident at 12 and 14 days while the texture of collagen fibers of the dermis was more dense than normal. At this time there were no areas of necrosis or enzymatic lysis evident (Figure 7). At 18 days there was definite hyperplasia of collagen in the dermis without evidence of scarring. There were many fibroblasts in the deep dermis and several round cell clusters surrounded the capillaries (Figure 8).

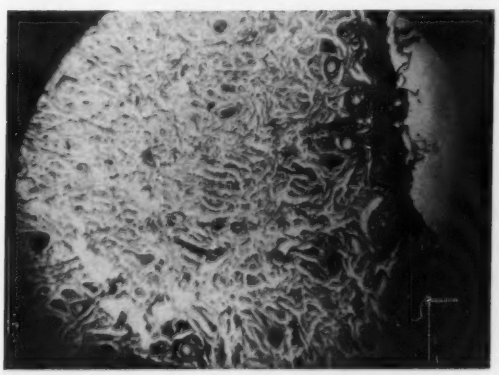


Figure 7

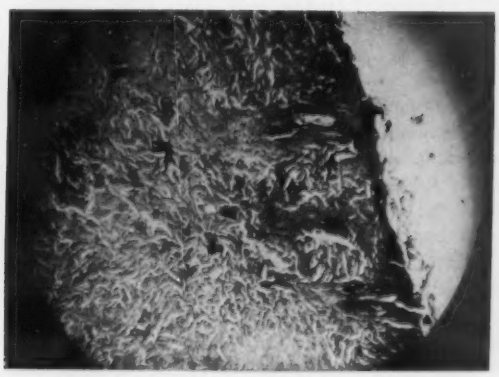


Figure 8

Group II: The microscopic findings in these animals treated with Alo-Creme Ointment containing 5% cystine did not show any appreciable difference from those of Group I during the first 48 hours. However, after four days there was more marked debridement of the upper dermis. At the end of the first week there was hyperplasia of the basal layer of the epidermis. During the second and third week there was intensive fibroblastic activity, some congestion and diffuse collagen hyperplasia in the dermis.

Group III: Marked edema, severe congestion and isolated capillary thrombosis developed during the first six hours. After 48 hours the upper dermis showed dissection from the deeper dermis. After four days there were multiple hemorrhages in the dermis. Capillary congestion and perivascular polymorphonuclear infiltration increased between the fourth and tenth days. At this time there was massive debridement of the superficial layers of the dermis which was infiltrated with polymorphonuclear leucocytes, while there was some evidence of fibroblastic activity in the deeper layers of the dermis.

Group IV: The microscopic appearance of the areas treated with petrolatum and gauze was similar to that of Groups I and II in the first two hours except that there was more dehydration and isolated capillary thrombi at two hours. After six hours the dermis showed leucocytic infiltration which became abundant after 24 hours. At this time there were many capillary thrombi and the upper layer of the dermis showed numerous dark staining areas of debridement. After 48 hours the microscopic demarcation of the eschar was complete. After one week there was intensive fibroblastic activity underlying the zone of demarcation. At the end of the second week the entire eschar was shredded and debriding in large pieces which were densely infiltrated with polymorphonuclear leucocytes. During the third and fourth weeks there was marked collagen hyperplasia, fibroplastic activity and scarring with little regeneration of the epidermis. There was little difference between this group and the controls.

Summary

Gross and microscopic observations in these experiments showed that in deep dermal burns an eschar forms and separates microscopically in 24 to 48 hours and grossly the eschar separates in 10 to 14 days if the skin is not treated with ointment after burning.

The study of the burned skin in the untreated group, showing this clear-cut separation and demarcation, suggest that early treatment should be directed toward the prevention of the changes which produce the formation of the eschar within the first 24 hours.

Group I—Treated with Alo-Creme Ointment: The skin burned and treated with Alo-Creme Ointment remained pliable and soft during the first week with slight and continuous superficial debridement of the upper dermis and without gross or microscopic separation of an eschar. These lesions healed in two weeks without gross evidence of scarring.

Group II—Treated with Alo-Creme Ointment containing cystine: Identical burns treated with Alo-Creme Ointment containing 5% cystine, showed during the second week more superficial debridement than observed in animals of Group I. There was no gross or microscopic separation of an eschar and no gross scarring occurred. There was little or no difference between this group and Group I.

Group III—Treated with trinitrophenol ointment: The appearance of the skin was comparable during the first 24 hours to that observed in Groups I and II. Then these lesions became grossly and microscopically hemorrhagic and the separation of an eschar was evident microscopically at 48 hours. None of the animals survived the tenth day and hemorrhages were found in the skin at the end of the first week.

Group IV—Treated with petrolatum and gauze: During the first three days there was a gradual development of congestion, edema and focal hemorrhages of the skin area in these burns. Microscopically an eschar did develop and separate during the first 48 hours. By the end of the first week there were numerous hemorrhages and several small abscesses. At the end of the second week the entire dermis was debriding in large masses and the lesions healed by scarring during the third and fourth week.

Bibliography

ALTEMEIER, V. A.; GOITH, R. L.; CULBERTSON, W. R. and TYTELL, A.: Enzymatic Debridement of Burns. *Ann. of Surg.* 134: 581, 1951.

ARZT, C. P.; REISS, E.; DAVIS, J. H., JR. and ANSPACHER, W. H.: *Surgery of Trauma.* 457, J. B. Lippincott Co., Philadelphia, 1953.

BOYD, W.: *Textbook of Pathology.* 284, Lea and Febiger, Philadelphia, 1955.

BROOKS, F.; DRAGSTEDT, L. R.; WARNER, L. and KNISELY, M. H.: Sludged Blood Following Severe Thermal Burns. *Arch. Surg.* 61:387, 1950.

COPE, O.: The Treatment of the Surface Burn. *Ann. Surg.* 117:885, 1943.

COPE, O.; NATHANSON, J. T.; ROURKE, G. M. and WILSON, H.: Metabolic Observations. *Ann. Surg.* 117:937, 1943.

COLEBROOK, L.: Outstanding Problems in the Treatment of Burns. *Lancet,* 2:273, 1951.

COLEBROOK, L.; DUNCAN, J. M. and ROSS, W. P.: The Control of Infection in Burns. *Lancet,* 2:705, 1951.

EADES, C. H.; POLLACK, R. L. and HARDY, J. D.: Thermal Burns in Man. *J. Clin. Invest.* 34:1736, 1955.

LUND, C. C. and BROWDER, N. C.: The Estimation of Areas of Burns. *Surg. Cynec. and Ost.* 79:352, 1944.

MAXIMOW, A. A. and BLOOM, W.: *Textbook of Histology.* 330, W. B. Saunders Co., Philadelphia, 1947.

PRICE, P. B.; CALL, D. E.; HANSEN, F. L. and ZERWICK, C. J.: Histologic Changes in Experimental Thermal Wounds. *Surgery,* 36:664, 1954.

REISS, E.; PEARSON, E. and ARZT, C. P.: The Metabolic Response to Burns. *J. Clin Invest.* 35:62, 1956.

WALLACE, A. R.: The Exposure Treatment of Burns. *Lancet,* 1:501, 1951.

Newer Hazards from Radiation

• WILLARD MACHLE, M.D.
Associate Professor of Research Pharmacology
School of Medicine
University of Miami
Coral Gables, Florida

It is necessary to maintain a sense of magnitudes and proportion when viewing hazards of radiation, old and new. Recent publications in the lay press have expressed fear of effects upon the population from diagnostic radiology, fallout and the like. I should like to place in perspective the principal sources of exposure to ionizing radiation. Hazards from radiation both old and new must be given continuing appraisal especially with reference to trends in magnitude.

You are all aware of the genetic effects of ionizing radiation and that these will become apparent only in future generations. Clear-cut genetic effects can be obtained with doses of 25r. Moreover, in view of the linear relationship between dosage and mutagenic action it is possible that there is no threshold for effect, that is, any amount of ionizing radiation may produce mutations. It is of utmost consequence to the human race whether our exposure is to 5r, 10r or 20r.[1] A recent publication of the National Academy of Sciences[2] gives some disturbing estimates of the possible genetic consequences of doubling our present dose of radiation. At present about 2% of all live births in the United States have defects of simple genetic origin. These range from mental defects through all of the organs and tissues of the body. If man were subjected to a doubled dose of radiation then the present level of 2% of genetic defects would rise and eventually be doubled. For example about 100 million children will in the future be born to the population presently alive in the U. S. Of these 100 million, 2%, or approximately two million will experience genetic defects, from mutant genes induced by natural causes exclusive of man-made radiation. If we were to be subjected for generations to a doubled dose of man-made radiation then the figure of two million with genetic defects would gradually rise to a new total of four million with perhaps 10% of the increase occurring in the first generation. It is obvious that we must scrutinize all new sources of ionizing radiation both with respect to immediate somatic effects as well as for the additional increment such source may contribute to the existing level of radiation dosage.

The amount of radiation that the population receives exclusive of atomic sources controlled by man comes from two principal sources, background radiation and medical uses of x-rays. Background radiation usually is defined as the radiation which results from causes beyond our control, cosmic radiations, naturally occurring radioactive elements such as radium, thorium, uranium, potassium and others. In a 30 year period it is estimated that the average person receives to his gonads a dose of from 4½r to 5½r from this source. The amounts are quite constant for any locality, the higher figures being obtained at high altitudes where the cosmic ray increment is greater. In the evaluation of estimates of this kind one must always keep in mind that these are arrived at by calculation from random observations. There can be considerable differences dependent upon the data selected and the basic assumptions made. Using the foregoing figures and others it would appear that the total body radiation received would approximate the following:

Earth's Crust	r per year
Thorium	0.04
Potassium	0.04
Radium and uranium	0.02
Cosmic Rays	0.04 to 0.08
Potassium in human body	0.035

Depending upon geology and other factors the total exposure may range from 0.1 r to 1.0 r per year. It is important to keep in mind that natural radioactive materials are widely distributed in the earth's crust. It has been estimated that a layer of soil one foot thick and one square mile in area will contain, on the average, more than one gram of radium, three tons of uranium and six tons of thorium.[3] Under exceptional circumstances such as residence in dwellings made of radioactive stone (as in Sweden) the annual exposure from that source alone can reach 0.5 r per year.

The foregoing is the radiation that is with

us all the time. To this amount must be added the radiation contributed by diagnostic radiology. These examinations usually include only part of the body and the exposures are variable. If we compare x-ray values with those for background one can see that a single fluoroscopic examination may result in exposure of 20 times that of background for one year. Any radiation therapy may result in exposures several orders of magnitude greater than those for diagnostic x-ray. It should be remembered that the areas exposed in therapy are usually small, though not always so. For example a skin lesion may receive 4,000 r in treatment, subdeltoid bursitis 400 r, spondylitis 3,000 r and enlarged thymus 400 r.

I have discussed in some detail these inescapable and customary sources of radiation in order to emphasize the magnitudes entailed — it is against this background that we must evaluate the practical significance of the newer sources. The most dramatic and widely publicized source is fallout from explosion of nuclear weapons. At present weapons tests are the only significant new source of radiation in the general environment. The primary radiant energy has a duration of seconds but the nuclear reactions produce radioactive fission products. The amounts of these produced in a single explosion will depend upon a number of factors such as efficiency, design and size. The ranges can be great. For example, in the ordinary bomb, say of 20 kilotons TNT (trinitrotoluene equivalent), about two pounds of radioactive fission products are produced. Larger bombs (so-called hydrogen bombs) of megatons power may produce as much as one half a ton of fission products from the uranium used with them. Dangerous contamination from a single bomb therefore may range from a few square miles to 5,000 or 10,000 square miles. For a bomb of any power there will be great differences in the amount of contamination, depending upon the altitude of the burst and whether under ground or water. Another important variable is the effect of size of burst upon ability to penetrate the tropopause to the stratosphere.

Fallout in general follows three patterns — some, which represents fission products adsorbed on debris falls within a few hundred miles, usually within 24 hours; an intermediate class falls to earth in a few weeks following an explosion; and a third class is that material which remains in the air for months or years. These classes are all of importance, the immediate fallout contains many short-lived products and will result in a higher total radiation dosage with short-term somatic and genetic effects. At the other extreme that which reaches the stratosphere to descend gradually in five or 10 years will lose its short-term radioactivity and come to be made up of the long-lived fission products and their descendants. It has been estimated that the total radioactivity of the fallout one day after the burst is 10,000 times greater than it will be in 10 years.

If we examine the data for accumulated radiation dosage outside the vicinities of the test sites we encounter maximum values of 0.1 or 0.2 r. This may be compared with the exposure of 1 r for a single chest x-ray or 20 r for a gastrointestinal series. The problem of over-all radiation dosage from either the explosion or the fission products is one that is limited to testing and military use. The particulate nature of the radioactive fallout creates a much more important consideration — internal radiation from radioactive elements and isotopes absorbed into the body. Fallout will contaminate the air, land and waters of the earth and will be absorbed, stored, concentrated and excreted by living things. Thus radioactive elements stored by plants may be eaten by man, by the animals that man eats, or find its way into man through the air he breathes or the milk and water he drinks.

Except in test areas and for brief periods, contamination at present appears to be negligible. However we need to know more about long-term effects of radioactive particles retained in the lungs and the reticuloendothelial system, or stored in the bones. Inadvertent and unfortunate experience with radium and mesothorium have established the following pattern:

1. The radioactive elements continue to act upon the tissues until they are eliminated.
2. Owing to deposition in bones and teeth many elements will remain in the body for years.
3. Deposition in the tissues enables the alpha and beta particles to exert an intense effect upon a small volume of tissue but upon a very large number of cells.
4. The safe level of storage of a long-lived radioactive element of the radium series is not known. By agreement, one tenth microgram or one tenth microcurie has been decided upon as the safe level.

Using this figure of one tenth microcurie we will now examine the potential hazard from fallout from the point of view of the isotopes which are inhaled and ingested. Limitations of space do not permit a detailed discussion of the characteristics which make some isotopes more dangerous than others. Among these hazards are:

1. Availability: some such as strontium 90, cobalt 60, phosphorus 32, iodine 131, are more common.
2. Retention: in general the more retained, the greater the internal radiation exposure.
3. Distribution in the body: some tissues are more radiosensitive than others.
4. Type of radioactive descendants: these will determine its distribution.

5. Effective half-life: a measure of persistence in the body, including radiologic and biologic half-lives.

At the moment the most important radio-isotope under investigation is strontium 90. From a long-range point of view there are several reasons for this. First its half-life of 28 years is long. Second it is stored in the bones, where there is some evidence that it will cause leukemia or bone tumors. Although not the only long-lived isotope, it has been found to be now present in human bones. The majority of other fission products are either produced in smaller quantities, have shorter physical half-lives or are rapidly excreted. These, however, cannot be ignored, especially cesium, cerium barium and ruthenium.[4]

Strontium 90 has been the subject of considerable controversy — in fact even became an issue in a presidential campaign in the United States. Levels of strontium 90 in the diet are under study as is the radiostrontium content of human bone. The problem of monitoring the radiostrontium fallout was relatively simple at first because of the small yields from the explosions and these were distributed below the tropopause where fallout is accelerated by precipitation and other factors. With the advent of megaton bombs with contamination of the stratosphere the rate of fallout is greatly reduced, half-time being estimated at from five to seven years. This results in mixing from more than one test and wide distribution with cumulative deposition. If testing is not continued on a large scale it is estimated that the contamination of the earth's surface will reach a value of from 20 to 40 millicuries per square mile by the end of the next decade. Since radiostrontium emits no gamma rays it does not constitute an external hazard to man. However its chemical behavior is like that of calcium and it finds its way into his foods, is absorbed, partly excreted and partly stored in the bones. Just how important is the hazard to man from this? Analyses of human bones reveal a world-wide average of radiostrontium of 0.12 micromicrocuries per gram of calcium (referred to as the strontium unit SU). The National Committee on Radiation Protection recommends one microcurie of radiostrontium as the maximum permissible body burden for occupational exposure and for public exposure one tenth this amount or 100 micromicrocuries per gram of calcium (100 SU). The margin of safety based upon even the most conservative estimates appears to be about a thousand fold on the average. Food grown in areas of low calcium content may have radiostrontium contents of from 10 to 100 times the mean. It is possible therefore that in some restricted localities some people could exceed the average S.U. concentration by a factor of 10.[5] This would still permit a one hundred-fold margin of safety to which is added the increased safety from the reduced dosage of natural radioactive decay. The situation at present therefore appears to be safe. This does not imply that we may ignore the problem — it is, and should be, under continuing study but assuredly is no cause for alarm at this time.[7]

Large-scale production of nuclear power will create additional hazards. Over the next 15 years a production of nuclear power of from 20,000 to 40,000 megawatts is estimated. England expects to be producing 6,000 megawatts in the next few years. In general, a 100 megawatt reactor (heat) will in one year of operation, produce the same quantity of long-lived fission products as the detonation of a one megaton bomb. Several types of radioactive wastes will be encountered. Gaseous and air-borne particulate wastes range from gaseous Argon (41) to particulate aerosols up to 20 microns. Even with filter efficiencies of over 99.9%, some effluent escapes to the atmosphere and is dispersed. Filters, chemical scrubbers and the like are designed for specific load limits, and in the event of accidents strange things can happen. For example last year in England a fire broke out in a reactor that was shut down for repairs. The pile was air cooled, the effluent being passed up towers 130 meters high, at the top of which filters were located. The fire raised the temperature of the fuel elements and ruptured the cans enclosing them, the exposed uranium, which is pyrophoric, caught fire and the draft carried large amounts of vaporized fission products up the chimney which in turn became heated above the vaporization point of radioiodine 131. This, and a portion of the approximately 40 other fission products escaped the filters. Within two days, radioiodine was appearing in local milk supplies. In six days the iodine was appearing over an area of 200 square miles. The half mile life of iodine 131 is six days so the contamination was relatively short lived. It should be emphasized that this was a production pile in operation for seven years. Accidents with experimental piles are more frequent and are to be anticipated.

There are several other sources of potential exposure in the operation of power piles. There are low-level wastes containing only a few microcuries of activity per gallon but the wastes accompanying the chemical processing of spent reactor fuel are more important. At present, this operation, which involves the disposal of liquids containing up to 2,000 curies per gallon, is limited to a few locations, but with certain types of reactors it will be more feasible to process the fuel at the reactor site with resultant dispersal of the hazard. At the moment, the waste disposal problem from power reactors and reclamation of

fuel is becoming apparent. As the use of nuclear energy grows in the U. S. and elsewhere the total quantity of radioactivity to be disposed of becomes a staggering figure; in seven years a maximum of 2 x 10^{10} curies and in 40 years 1 x 10^{12} curies. Whether this is disposed of in the atmosphere, earth or sea it becomes apparent that there is not enough material in the earth, air or sea, to permit continuing dilution. Several practical approaches to this problem appear possible, these include fixation in inert media, removal of the most dangerous isotopes (such as strontium 90 and caesium 137), or disposal underground into selected geological formations.

The extensive use of radioisotopes in research, agriculture and in industry offers another new potential hazard, fortunately limited to a relatively few individuals. Examples have been given[6] of accidents and careless handling. A case is described in which a source of cobalt 60 was used in the radiography of welds. An employee removed the cobalt capsule, put it in his shirt pocket, and later in the glove compartment of his car. He received an estimated whole-body gamma dose of 22 to 26 rad and an estimated dose to two small skin areas of about 3,600 rad.

Radioisotopes are increasingly and widely used in physics, including tritium, boron, mercury 202, cadmium 114, copper 63; and in chemistry, carbon 14, chromium 51, iodine 131, sulfur and many others. In industry nearly 2,000 companies are using radioactive materials daily. There are hundreds of uses in industry, from radiography, thickness or density gauging, other measurement problems, luminescent materials, static elimination, sterilization of biological products and in the preservation of foods, to mention only a few. The uses in agricultural research are legion. As the use of radioisotopes increases we may expect a progressive widening of the area of exposure in the general population. A well known and old source of exposure results from the use of luminous dials on timepieces, signs and the like. Radioisotopes are cheap and effective substitutes for the radium and polonium currently used. Exposures to the individual from the dials of luminous watches cannot be ingnored. In the case of a man wearing a watch 16 hours a day there will be an exposure to the skin of nearly 1 r per week. This is nearly 66% of the permissible exposure to the arms. With respect to irradiation of the gonads, most active watches will deliver the equivalent of 1 r in about five years. One should emphasize that this amount of 5 r (rem) is more than 100 times the radiation presently received from radioactive fallout. The amount is greater than the contribution from background and is second only to the amounts from diagnostic radiology.

Summary

A potential hazard to the general population is created by nuclear conversion and power plants, and in the testing of nuclear weapons. These may arise from:

1. fallout from weapons testing
2. accidents and malfunctions in nuclear units
3. disposal of wastes
4. reclamation and preparation of fuels.

At present these hazards have not resulted in injury to the general population and the margins of safety involved are adequately large.

In the cases of individuals employed in the atomic energy installations, any degree of hazard may be experienced but this is limited to a few technical operators.

The extensive agricultural and industrial use of radioisotopes has greatly increased the numbers of men potentially exposed — this remains a research or industrial consideration — but there is no evidence of danger to the community at this time.

We all experience exposure to radiation as part of our life in our social communities on earth. At this time a portion comes from the natural sources of the earth and the galactic system. This may amount to as much as 1 r per year.

An additional exposure accompanies the use of medical radiologic devices used in the diagnosis and therapy of disease. This averages 5 r in a 30 year period but may reach 20 r per year if fluoroscopy is done.

The increased hazard to the public from the human atomic activities listed above is an important consideration for the future but at this time exists either as a conjectural hazard or an unimportant increment of exposure when compared with the usual sources of exposure to radiation that are part of our everyday life.

References

1. NEEL, J : Delayed Effects of Ionizing Radiation. *J.A.M.A.*, 166:908, 1958.

2. Biological Effects of Atomic Radiation, Summary Reports. Washington, D. C., National Academy of Sciences—National Research Council, 1956.

3. SCHILLING, C. W.: Remarks Prepared for the Symposium on Radiation Hazards, Sponsored by Hunter College, Graduate Division and Sloan-Kettering Institute for Cancer Research. Feb. 20, 1957.

4. LIBBY, W. F.: Radioactive Strontium Fallout. *The Proceedings of the National Academy of Sciences*, 42:365, 1956.

5. KULP, J. LAWRENCE, ET AL: Strontium 90 in Man. *Science*, 125:219, 1957.

6. SCHILLING, C. W.: Everybody's Business — The Problem of Fallout and Radiation. *Industrial Medicine and Surgery*, 27:349, 1958.

7. ANON.: Maximum Permissible Amounts of Radioisotopes in the Human Body and Maximum Permissible Concentrations in Air and Water. Handbook 52, U. S. Dept. of Commerce, National Bureau of Standards, March, 1953.

The Fifth Lake Logan Conference in the Assembly Hall

Mental Health in Industry

The Fifth Annual

LAKE LOGAN CONFERENCE

Canton, North Carolina

May 8, 9 and 10, 1959

The mind stretched by the impact of a new idea never shrinks to its former dimensions. This belief applying as it does to occupational health is imbedded in the roots of the Lake Logan Conferences on occupational health.

For this annual event the host was The Champion Paper and Fibre Company as represented by Reuben B. Robertson, Sr., Chairman, and Reuben B. Robertson, Jr., President.

Unlike its four precedents, the 1959 Conference limited itself to a specific topic, "Mental Health in Industry." The Conference was built around Dr. William C. Menninger of the Menninger Foundation, Topeka, Kansas; and as psychiatric consultants were Dr. Ralph T. Collins, Eastman Kodak Company, New York; Dr. Leonard E. Himler, Mercywood Sanatorium, Ann Arbor, Michigan; Dr. Harry Levinson, The Menninger Foundation, Topeka, Kansas and Dr. Alan A. McLean, International Business Machines Corporation, New York.

In addition to the keynote address of Dr. Menninger the formal presentations were: "The Significance of Work in our Lives," Dr. Donald G. Marquis, Social Science Research Council, New York and "The Anatomy of Personality," Dr. Alan A. McLean, International Business Machines Corporation, New York.

For the purposes of exploring this topic of "Mental Health in Industry" the 80 participants, consisting of about one-half each of industrialists and industrial physicians, were divided into five groups of 16 each. The diligence of one of these groups was so contributory to this topic that its report to the total Conference is here produced in full.

Report of Discussion Group III

I. What should management consider to be satisfactory mental health on the job?

Satisfactory mental health is that state of personal adjustment which results in satisfactory

continuing performance on a job without adversely affecting either the performer or the enterprise.

II. What are early signs or manifestations of unsatisfactory mental health on the job?

Group III considers that there are some clear and obvious on-the-job manifestations of unsatisfactory mental health. Among these are:

1. Unexplained changes in performance, personality or attitude on the job.
2. Multiple medical attendance and excessive personnel office visits.
3. Wandering from assigned work place.
4. Unwillingness or resistance to accept instructions or correction.
5. Flaunting authority.
6. Disloyalty.
7. Chronic irritability and contentiousness.
8. Repeated accidents.
10. Erratic performance.
11. Destructiveness.
12. Work spoilage.
13. Chronic financial problems.
14. Frequent misdemeanors.
15. Chronic absence.
16. Tends repeatedly to upset co-workers.

These singly or in combination are danger signs or manifestations of the five main categories of unsatisfactory mental health.

1. Unsatisfactory attitudes: These include sulleness, hostility, arrogance, resentment, defiance, suspiciousness, negativistic reactions, blaming others for one's own faults, wiseacre and smart-alec.

Individuals with these unsatisfactory attitudes we feel cannot be materially helped by industry, and must be considered to be liabilities as employees. They are hired at risk to the enterprise.

2. Emotional instability: This is evidenced by immaturity, anxiety, undue and excessive tension, excessive fear, moodiness, withdrawal, indecisiveness, over-aggressiveness, depression and panic states.

These emotional tendencies exist in all degrees, minor, moderate and severe, and where not severe, can be alleviated or even reversed. Many people with marked emotional sensitivities can be valuable employees.

3. Excessive use of alcohol or drugs: The manifestations of this condition include "morning after" irritability, irresponsibility, absences, tardiness, denial and dissimulation, undue touchiness, sensitivity and excitement, thick tongue and slurred speech. Impaired comprehension and untruthfulness are frequently encountered. Tremors and unsteadiness are often visible.

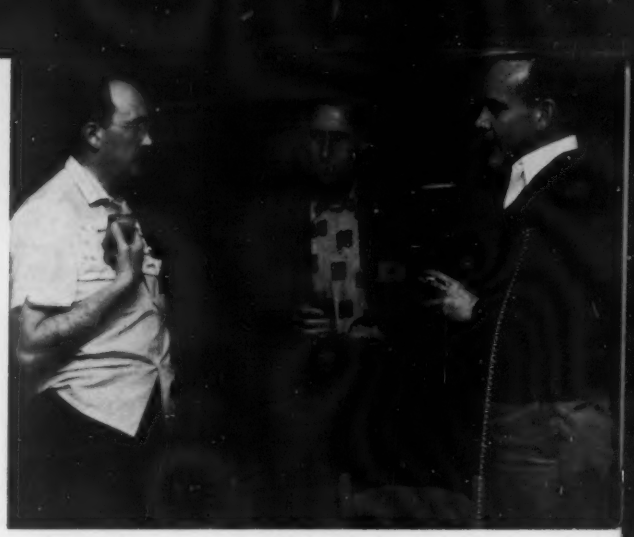
This is one of the most complex and controversial mental health problems confronting industry. It requires special attention and consideration. Frequently involved are employees with great ability and capacity.

4. Congenital or inborn inadequacies: These include defects in intelligence and personality which have been present from birth and cause obvious stigmatization. These obviously include such manifestations as feeblemindedness, low or zero motivation, passivity, inability to follow routine, slothfulness, irresponsibility, unresponsiveness and social inadequacy. Properly placed, for special assignment, industry can and should hire a few of these individuals.

5. Frank mental illnesses: These are usually characterized by such obvious symptoms as confusion, disorientation, delusions and other overt disturbances of thinking or behavior. When recognized they should be referred for psychiatric treatment.

III. What are some of the job related triggers of unsatisfactory mental health?

Discussion Group III considers that there is an affirmative requirement for industry to concern itself with the creation and preservation of those conditions which foster alert intelligence, even tempers and socially considerate behavior,



Three of the principal participants. From the left: Ralph T. Collins, M.D., Alan A. McLean, M.D. and Robert B. O'Connor, M.D.

Two members of the Robertson family. Left, Logan T. Robertson, M.D., and right Reuben B. Robertson, Sr., Chairman of the Board, Champion Paper and Fibre Company, chief host of the conference.

One of the hard working subgroups under the chairmanship of Mr. Karl R. Bendetsen who is shown against the background window.

so that crises can be prevented, averted or dealt with. This means that the action tempo of every industry should be well paced and sure footed.

The more commonplace triggers which cause the manifestations of unsatisfactory mental health to emerge are as follows:

1. Failure adequately to deal with ordinary job disappointments, such as shift assignments, wage adjustments, or promotions.
2. Undercutting, by-passing and over-ruling.
3. Unpredictability of layoffs.
4. Job insecurity.
5. Incompetent front-line foremanship.
6. Inadequate induction and orientation procedures.
7. Lack of enlightened discipline.
8. Unsuitable placement and assignment.
9. Inadequate recognition or appreciation.
10. Failure to provide status recognition and status symbols.
11. In-plant conditions leading to racial, religious or political conflicts.
12. Failure to correct obvious abuses and infractions.
13. Reprehensible supervisory practices such as public reprimand, punitive silence, favoritism and refusing to listen.
14. Deficiencies in the grievance procedure.
15. Unsatisfactory mental health in a supervisor, to include the domineering and autocratic boss.
16. Inadequate communication between levels of supervision.
17. Unsatisfactory industrial hygiene and safety conditions.
18. Impending retirement.
19. "Kitchen cabinets" or subgroups.
20. Inadequate personnel services and counseling.

A sound and enlightened organizational environment is perhaps the major ingredient of satisfactory mental health on the job. People who would present mental health problems and render unsatisfactory performance in one organization would not do so in another or even in the same one with sound leadership. Where an industry has defined objectives, clear lines of authority, sensible regulations which are applied without favoritism, and where people know what is expected of them, the incidence of unsatisfactory mental health conditions may be greatly reduced, and marginal conditions may never make their appearance.

IV. What can be done within an industrial organization to alleviate and prevent conditions which trigger unsatisfactory mental health on the job?

Group III is of the opinion that job related conditions do actuate mental health problems. The group is also of the opinion that within the widely accepted policy of industrial organizations, there are both bases and opportunities for coping with such problems. Of necessity there are practical limitations, chief among these being that an organization must for the most part use the resource personnel it has. The primary onus for both causative and preventive measures devolves upon the line supervisory force.

An adequate medical department and occupational health activity suited to the size of the industry is a necessity.

In order for any occupational health program to be effective, the right climate is required at the summit of the organization.

Regardless of the climate at the summit or the adequacy of the medical and industrial hygiene departments, a basic requirement is that first line foreman be mentally healthy and competent. A feature of the occupational health program should be the training of all first line foremen in mental health principles and emotional first aid.

The entire supervisory organization and the physicians and nurses in the medical department should work in harmony with each other within the framework of a commonly understood

But hard work gave way to . . .

and accepted set of organizational principles, practices and philosophy.

Through the good offices of both management and the medical department, maximal use of various community resources should be made, particularly of such qualified persons as physicians, psychiatrists and clergymen.

The competent supervisor is able to deal with the ordinary minor on-the-job emotional situations. He should know his limitations and should be trained in the recognition of situations requiring referral for professional attention, and in seeking prompt guidance through his supervisors and the medical department.

Any organization can achieve occupational and mental health only if the people within it recognize that the principal justification for dealing with mental health problems is to insure the successful performance of the enterprise. The interests of the individual and the enterprise are inseparable.

By the time of the close of the Conference it was concluded that in every industrial work force some 20% of all workers exhibit abnormal mental states. This percentage probably is applicable at all levels of industrial organizations from laborers to top executives, not excluding medical departments themselves. While frank psychoses are a rarity, the borderline mental states clearly are diagnosable and the workers possessing them include such work force troublemakers as the accident prone, the chronic absentee, the alcoholic, the disloyal and the spoiler and waster of work material. In a just sense it may be contended that abnormal mental states constitute the foremost medical difficulties of the industry, but clearly it appears established that these mental disturbances are in no sense occupational diseases as to causation. Instead they stem from the total life patterns and backgrounds of industrial workers at all levels and in all forms of industry.

Labels—Legal or Lethal?

Warnings on the labels of all products containing hazardous chemicals was declared as the objective of a model law formulated by the American Medical Association and recently introduced into Congress. Speaking before the Association of Food and Drug Officials of the United States, meeting in Boston, Mass., Bernard E. Conley, Ph.D., Chicago, Secretary of the A.M.A. Committee on Toxicology, declared, "If we are to educate people to read labels and obey their warnings, we must require identification of hazardous ingredients on all products, not merely on certain chemicals such as pesticides."

Half of all substances causing accidental injury and death are not required by law to carry precautionary labeling. Many of these are used in the home, in small businesses and in other areas where control of harmful exposures is not as guarded as in the manufacturing process. While three-quarters of these products contain substances which are moderately toxic or worse, most states and the federal government have no laws to require them to carry warnings or to declare toxic or other hazardous constituents, Dr. Conley declared.

There has been a growing acceptance of the need to label hazardous household chemicals. Examination of over 1000 varieties of products revealed that chemicals used in commercial establishments, such as hotels, garages, laundries and restaurants, need the benefit of labeling as greatly as those entering the home.

Occupational Health Services

In Small Businesses

• HAROLD J. MAGNUSON, M.D.
Chief, Occupational Health Program
Public Health Service
U. S. Department of Health, Education and Welfare

Are we attempting to pattern the means of bringing health services to employees in small plants too closely after the mechanisms used in large industries? While the desired ends are the same, the means, channels or resources will vary because of costs and other factors.

We think of ourselves as a nation of large industries, for big business is what we usually hear about. But over 99% of all establishments under the old-age and survivors insurance program of the Social Security Administration employ less than 500 workers, and recent surveys indicate that small businesses are on the increase. Employees of small businesses represent approximately two-thirds of our labor force.

While the economic and social values of preventive health services, covering nonoccupational as well as occupational influences, have been long recognized by many larger industries, such services, owing to a variety of reasons, have been largely lacking in small plants. A closer scrutiny of this problem is needed, both to identify the factors responsible for the slow development of such services and to devise effective mechanisms for bringing these services within the reach of employees in small plants.

Facts and Problems

The ultimate objectives of good health services for employees are the same for all working groups regardless of size. The health professions, government, management and labor generally support the following basic purposes of employee health services: (1) to protect workers against on-the-job exposures to materials and conditions that will adversely affect their health, (2) to help place individuals on jobs for which they are physically and emotionally suited so that they can work without endangering their own health or that of their fellow employees and (3) to encourage personal health maintenance.

Less than one out of 10 of all employees are estimated to have preventive health services available to them through industry. Most of those who have such services work in large industry. Far too many small plant workers receive only emergency treatment of accidents. In considering extension of preventive health services to small plants, a series of lines should be drawn for various plants, depending on such factors as the nature of the industry, its size and geographic location, and different approaches developed for each plant as necessary. Thus, for the "smaller" plants, it may not be economically feasible for management to provide preventive health services for employees. The solution may perhaps lie in the strengthening of community programs and other resources to reach small plant workers with services of this type.

Current Small-Plant Programs

Certain industries, employee groups and communities have attempted various approaches to meet the glaring deficiency of preventive health services for employees of small businesses. However, neither enough nor sufficiently varied experience has been gained to recommend any one method unequivocally.

The following programs that have been started

Prepared for the 1959 National Health Forum, March 17-19, Chicago, Illinois.

illustrate various approaches determined largely by the mechanism of financing. Thus we move from the individual program, completely sponsored and financed by a single company, to utilization of various other mechanisms and resources available to the business establishment.

Individual Programs: The individual program, providing full- or part-time services of a physician and/or nurse at the plant, is found in comparatively few small plants. These programs are staffed in some instances by physicians that limit their practices to industrial medicine and serve a number of plants. In the more effective programs, the physicians visit the plants and are concerned with on-the-job environmental conditions as well as with provisions of emergency care and physical examinations. In many instances, however, the physician is "on call" for emergency care only. Plants with this type of program may or may not employ nursing personnel or contract with a visiting nurse association for in-plant service.

An individual plan, providing regular service in the plant, affords the greatest flexibility and can be readily established. The chief disadvantage is that the per capita cost of such a program is much higher in small plants. The cost per hour of a physician when paid for on an individual basis is likely to be greater than under a cooperative plan.

Cooperative Programs: In some instances, small plants have found that they could best provide their employees with a broader service by banding together in cooperative programs. Such programs usually take the form of one of the two following plans, each of which can be operated with modifications.

(1) Occupational Health Center: The distinguishing characteristic of the Center is the centralized dispensary or clinic used by several participating companies. One center serves a number of small business establishments. Included in this category is the type of plan providing for the movement of equipment and staff in mobile units from company to company. The main advantage of such a plan is that development of a program with a central clinic and cooperatively owned equipment permits nearly any employer — regardless of how few his employees or how limited his facilities — to furnish health maintenance services comparable to those of the larger establishments. A major disadvantage of this plan is the high initial investment. Equipment for the center is needed and some full-time staff must be hired at the outset. To keep the companies working together requires the time, energy and ingenuity of an individual dedicated to the purposes and success of such a program.

(2) Associated Occupational Health Units: This plan calls for the establishment of medical units in each company, all to be served by one physician. One of the chief advantages of this type of program is that the physician must visit the establishments where the workers are employed, a prime requisite for the successful operation of such a service. Also, since all medical activity takes place on the premises, workers do not lose time in traveling between their work places and a central clinic. Conversely, the great disadvantage is the travel time lost by the physician in going from place to place. Under this type of plan, a small company with inadequate space or resources to provide its own nursing services and dispensary would be precluded from participation. As with any enterprise, such a plan requires one or more enthusiastic and persistent individuals to organize it and keep the participating companies interested.

Community Programs: Frequently, small establishments have found it most effective to draw upon other resources available in the community, such as union health centers, voluntary agencies, insurance companies and official agencies, for the provision of health services to their employees.

(1) Union Health Centers: Union health centers provide varying health services for their own members. An increasing number of such centers are now providing services to members of other unions in the community or are being organized jointly by two or more unions. The services include definitive medical care and, increasingly, preventive services. Many centers also serve families of members.

(2) Voluntary Agencies: All of the voluntary health agencies have much to contribute to industry in the field of occupational health. They have programs of information, case-finding, education and consultation, and they are looking for opportunities to bring these to industry. To be most effective, however, they need to work together in their approach.

In some areas, these agencies have shown a willingness and ability to join forces through such mechanisms as community health councils, providing large numbers of employees with annual screening tests and health education material and, in some instances, preplacement examinations. The services are provided at a central clinic or at a mobile health unit which visits the plant.

Assistance in determining the value of employee health programs and in establishing such services is also available in many communities through the occupational health committees of interested organizations. These organizations include medical societies, health departments, chambers of commerce, voluntary agencies and labor groups.

(3) Insurance Companies: Research in occupational health is carried on in varying degrees by the various insurance companies in the United States. About 21 of the leading casualty insurance companies have personnel specially trained in industrial hygiene. Approximately two-thirds of the companies maintain industrial hygiene divisions, the majority of these with industrial hygiene laboratories. In addition to consultation on the control of environmental health hazards, many of these companies make available to the industries which they serve, assistance in the establishment of employee health services.

The insurance industry has played an important part in providing leadership in health maintenance and preventive medicine in both occupational and nonoccupational accidents and illnesses. Starting initially with accident prevention and safety guidance, the insurance carrier is generally well acquainted with the physical environment factors, work requirements and other occupational conditions. Also, the insurance carriers work closely with the local medical profession in such matters as claims, disability and medical costs.

(4) State and Local Official Programs: Health department interest in the promotion of occupational health services has been largely confined to the activities of approximately 40 states and 20 local health departments which have special units for this purpose. A recent count, including the three state labor department programs in Illinois, Massachusetts and New York, reveals that a total of 355 employees are engaged specifically in occupational health activities. It is significant, however, that 289 of these are engineers, chemists, physicists or other nonmedical workers, while only 31 are nurses and 26 are physicians. Consequently, the preventive medical aspects of these programs frequently suffer.

In some of the better staffed and more active occupational health agencies, small plant health programs have been supported in various ways. These efforts have ranged from stimulation of local interest in such programs to demonstrations of the value of employee health services. One current activity entails the inclusion of plant health services in generalized nursing programs carried on by the health department.

A study of "State Occupational Health Programs" published by the U. S. Department of Health, Education and Welfare in 1958 reported that the most frequently noted administrative problems relate to the unavailability of funds and personnel to carry out the significant program activities. Salaries are frequently too low to attract or hold the much-needed medical, laboratory and engineering personnel. Laboratory programs are needed in several states for the testing of material injurious to health and for assistance in research projects. Expansion into the newer field of radiological health has intensified the requirements for more operating funds.

Because of limited personnel, these agencies can reach no more than 10% of the nation's workers in any one year. Small plants, which cannot afford private consultation and research and consequently look to these official agencies for guidance and assistance, are particularly hard hit by this limitation. It is in these plants, too, where the greatest occupational health problems lie. It is believed that these problems compare to accident frequency rate which is two and one-half times greater in small plants. Also, many of these plants do not have the protection of workmen's compensation, since many of the laws exempt small industries, along with farmers and domestics.

Other Facilities and Services: Physicians in private practice, hospitals and visiting nurse associations represent other major available resources, both for individual and cooperative and full- and part-time employee health programs.

(1) Physicians in Private Practice: In many areas of the country, physicians, individually or in groups, have established clinics to provide industrial medical and nursing services to surrounding industries. The great preponderance of physician services, however, is provided on a part-time basis by general practitioners.

A poll by the American Academy of General Practice several years ago revealed that 93% of its members have some direct or indirect responsibility for medical service in cases of occupational origin.

It is estimated that more than 25,000 physicians are doing industrial medical work — 5,000 full time, 10,000 part time and another 10,000 on call.

(2) Hospitals: A few hospitals throughout the country offer preventive services to industries, such as preplacement, periodic, executive and retirement examinations, usually integrated with the other medical and surgical services of the hospital and clinic. Hospitals hold considerable promise as a medium through which preventive and diagnostic services could be provided many workers in small plants. Some authorities view the out-patient department of the hospital as a place where periodic examinations and other case findings and immunization procedures could be carried out for the control and prevention of disease.

(3) Services by Visiting Nurse Associations: Visiting nurses have been serving small businesses in various localities since the early part of the century. Services are provided in co-

operation with local physicians or medical associations. Association policy requires that each plant served must have a physician visit the plant on a regular time schedule, the minimum usually being once a week. Frequently, the benefits demonstrated by a part-time arrangement with a visiting nurse association have led to the establishment of a full-time nursing program by the plant.

Some Basic Considerations

Four Essential Elements: Whatever approach is used in bringing health services to employees of small plants, it has been found that the successful operation of such programs depends on four essential requirements: (1) the medical personnel must come into the plant for enough hours, daily or weekly, to meet the medical needs of the particular plant; (2) the medical personnel must be sincerely interested in developing a preventive medical program, not one limited solely to the curative aspects of plant injury treatments; (3) the primary aim must be the good of the employees and (4) the program must have the full interest and support of management. Obviously, it must have the support of labor collectively and the employees individually, but if it is set up for their benefit and staffed by the right physician and nurse it will inevitably receive their support.

Interrelation of Services: One of the important aims of a well-organized occupational health service is the bringing together of the employee and the family doctor, and the establishment of a close relationship between the plant health service, local practitioners and the health and welfare agencies in the community.

Training Needs: As the industrial environment increases in complexity, the spectrum of job-related illness broadens. Since the usual medical school and hospital training gives the physician little familiarity with these relationships, there is need for some special training in occupational health. Likewise, since a main focus of industrial health programs is the application of preventive procedures, there is need to reorient the physician, trained in the treatment of disease, to practive preventive medicine. Such indoctrination should ideally be interwoven into the basic undergraduate curriculum. Seminars, conferences and short postgraduate courses should also be held to keep general practitioners informed of latest developments of industrial medicine.

Similar training at the undergraduate and graduate levels is needed for nurses. Such training would not only better prepare them to accept positions in industry but also would increase their effectiveness in public health work and in other situations where they may be involved with health problems affecting employed individuals.

Some Basic Questions

What resources at the local level can be strengthened to the point that they can give adequate service to small plants?

What resources at the local level should be strengthened so that they can promote the development and utilization of these services?

How can better communication of information and correlation of efforts be achieved among various groups concerned with extension of health services to workers in small plants?

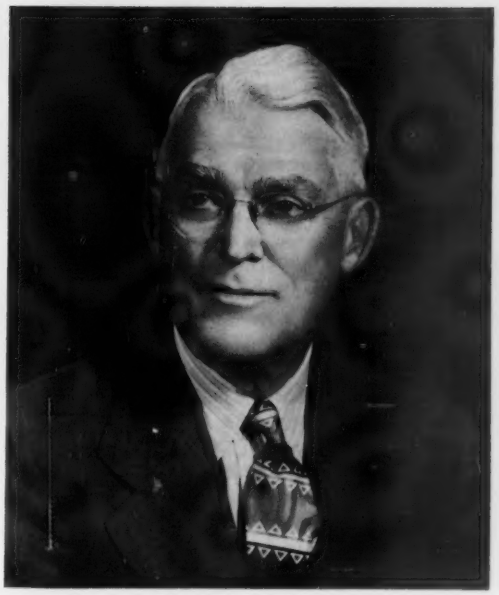
Are we attempting to pattern the means of bringing health services to employees in small plants too closely after the mechanisms used in large industries? While the desired ends are the same, the means, channels or resources will obviously vary because of the cost as well as other factors.

The Forty Ton Door

A door that weighs 40 tons but is so delicately balanced it can be opened and closed by one person manually is used in a new research center in Cleveland, Ohio, to close off its high-level test cell where the center will "package" radioactive isotopes for industrial and commercial users. The research center, described as one of the nation's most completely equipped radioisotope laboratories for commercial use, was built by the Picker X-Ray Corporation.

The giant door is basically an internally braced steel tank filled with concrete, about five feet thick, to provide adequate shielding from gamma rays emitted by radioisotopes handled in the cell. Picker can encapsulate radioisotopes in sources of up to 1,000,000 curies of Cobalt 60 — an amount equivalent in radiation to 1,000,000 grams of radium.

One authority says: "The true genius is a mind of large general powers, accidentally determined to some particular direction." Another, equally positive, asserts: "Genius does as it must." The apposition points up the age-old controversy as to whether the individual is the servant of fatalism or the child of chance; is born into a life of Kismet or of free choice; must follow a predetermined course or may pursue his own selection. The "or" is sharply alternative; the issue clear-cut; there is no middle ground. Arguments run to extremes, and settle nothing. It may be urged that, although the individual chooses, it is ordained that he will make the choice he does; that "accidentally determined" overlooks the possibility of the accident itself having been predetermined; that destiny and chance involve unknown and unconsidered forces. The man who possesses the mind of "large general powers," however, isn't likely to be much interested in the polemics attending his endowment. He is busy, pressing upon the days the stamp of his mind's powers,



Profiles in Occupational Health

Clarence D. Selby, M.D.

so busy that the controversy matters little. Later, when the time comes to look back on a career-succession of days so marked, it matters even less. What he did is done; the record stands. Why it was done may be left to his biographer.

The biographer discovers that the answer, impossible from logic, emerges from life. He finds that his subject, having attained the eminence in his "particular direction" that entitles him to the historical permanence of a biography, possessed, indeed, a mind of large general powers; but he also finds that the mind so identified had been doing "as it must," and that the "must" seems to have been so well and truly determined as to preclude any possibility that it was accidental. The history may be that of a larger movement or a lesser one; a world situation, a war, or merely a professional renaissance such as the development of industrial medicine, but its events are written in terms of lives in which it seems that accident was planning's apprentice and chance the handmaid of reason. Examples abound; so great is the cloud of witnesses attesting the fact, that the biographer well may say with Hamlet: "Seems, madam? Nay, it is. I know not seems." Again and again the economic situation, social conditions, the environment, the human material, the stirrings and trends of change, have become ready for the impact of a personality dedicated to the needs of the time. And suddenly there he was, taking hold as if his years before had been spent in getting ready. Who is to say they had not? The influences that seem, so often and so strikingly, to have prepared the career for the man and the man for the career, and to have brought the two together at the opportune moment, are mysterious indeed. It is an impressive thought that the "destiny that shapes our ends" also contrives our beginnings. Unnoticed, perhaps, but quietly and thoroughly, it works to such avail as to persuade the student not only toward agreement with Carlyle that history is the essence of innumerable biographies, but also toward going further, to near belief that the essence itself is not without design.

It is in this spirit that the history of industrial medicine is best written, and best understood. Its biographies are not innumerable; their number is gauged to the genesis and the growth

of the professional endeavor the specialty represents. But they are significant, in that each manifestation of the genius, each department of the adventure, that have made industrial medicine the principality of intellect that it now is, has furnished at least one inspired life wherein the "must" was mute obedience to the unfelt pressure of the unseen Hand. And thus the biographer who esteems his task approaches it with an awareness of more than chronology, and with such respect for the mind of large general powers that has left its mark upon its generation as will not admit that it was moved thereto by whim of fortune or caprice of chance.

This biography pivots on the year 1935. That was the year in which a certain mind of large general powers, under the ordinations that govern genius, began doing "as it must," with the result that the things accomplished by its possessor during the next 20 years were to accelerate the emergence of industrial medicine as a professional entity, and go far toward the identification and security of its place in the economy of the nation. The possessor was a surgeon in Toledo, Ohio. His name was Clarence Selby. Destiny had spent much time in preparing him for his "must" period; throughout 30 years he had been understudying a stellar role in which, until he was ready for the part, there was no star. He had learned his lines as they were being written; his script was object lessons, lived firsthand. All this without his realizing that the work and interests that were engaging his days had any such significance.

Clarence Davey Selby, M.D., F.A.C.S., was born at Des Moines, Iowa, in July, 1878. He graduated at Portsmouth, Ohio, high school in 1898; received his M.D. at Western Reserve University School of Medicine in 1902; interned at Lakeside Hospital, Cleveland, and was Resident Pathologist at St. Alexis Hospital, 1903-04. He was Demonstrator of Histology at Western Reserve School of Medicine during 1901, Assistant to Cleveland's City Bacteriologist, 1902-03, and Assistant to Doctor George Crile, 1904-05. He then moved to Toledo, and there, in 1905, he began his career in "special practice, industrial medicine." Among the industrial affiliations of his first year were Toledo Furnace Company, A. Bentley & Sons, and Toledo Shipbuilding Company, and the succeeding years brought him numerous others, to all of which he ministered as industrial surgeon and medical counselor. At St. Vincent's Hospital he was Visiting Surgeon, 1906-34, Consultant in Surgery, member of the Advisory Committee, and Chief of Staff, 1920-26. At Flower Hospital he was Visiting Surgeon, 1911-20. He was a Fellow, American College of Surgeons, American Medical Association, and American Public Health Association. In A.M.A. he was Secretary of the Section on Preventive and Industrial Medicine and Public Health, 1920; Chairman of the Ohio Committee on Hospitals, 1921-23. In A.P.H.A. he became Chairman of the Section on Industrial Hygiene in 1930. His memberships included Academy of Medicine of Cleveland, Academy of Medicine of Toledo and Lucas County, and American Association for the Advancement of Science. In Ohio State Medical Association he was Secretary-Treasurer, 1908-18; Managing Editor, *Ohio State Medical Journal*, during the same ten years; President of the Association in 1925. In public health, he was Toledo's Commissioner of Health, 1916-18; President, Ohio Public Health Association, 1923; President, Toledo Public Health Association, 1922-28. In industrial hygiene, he was Consulting Hygienist, U. S. Public Health Service, 1918-19; Surgeon (Reserve), 1919-29. In safety, he was Secretary, Health Service Section, National Safety Council, 1919. In community affairs, he was a member of the Toledo Charter Commission, 1928-29; President, Toledo Hospital Council, 1932; member, Recreation Commission, 1932-34.

In 1919, while he was its Consulting Hygienist, his report known as "Bulletin 99: Studies of the Medical and Surgical Care of Industrial Workers" was published by the U.S. Public Health Service. The survey he described in this 136-page, 70,000-word, book, if not the earliest of its kind, was certainly the most comprehensive. His material was gathered from 170 industrial establishments "variously located in the Eastern and Middle Western States, visited during the first six months of 1918 for the purpose of studying their medical and surgical facilities for the care of workers." His presentation of this material is dated by its illustrations, together with certain anachronisms in connection with the dollar sign when he mentions "remuneration of industrial physicians." Otherwise his descriptions and analyses, and, with a few exceptions, his comments, might have been prepared yesterday. That was due as much to his grasp of the subject as to the subject itself. His conclusions are an example. In the 40 years since he made his study many outlines or sets of principles as to what industrial medicine is, and what it should do, and how, have been dignified in texts and articles, but few of them are more than restatements of the substance of his 14-paragraph summary. He began his report: "Industrial medicine may be defined as the theory and practice of medicine applied to the purpose of preventing and alleviating sickness and injury among in-

dustrial workers in order that they may enjoy the benefits of continuous productive employment. . . . Physicians and employers both must realize that industrial medicine is, in a measure, a compromise between the ideals of medicine and the necessities of business." He divided the physicians in industries into four classes: "those who have drifted in," "those to whom industrial service is a job," "those who use the industries as a means to establish themselves in surgery or general practice," and "those who are qualified and are making industrial medicine their life work." Of the latter he said: "These men are giving their brains and their hearts to industry. . . . They are a credit to their profession, an exemplification of its ideals, and a very definite asset to the producers." Near the end of his report he noted that a Bureau of Industrial Hygiene had been inaugurated by the Division of Health of Toledo, July 7, 1917. Its objects were to identify "conditions and substances in places of employment having a harmful effect on the health of the workers"; study such harmful effects; suggest means for their elimination or minimization; and educate in matters of environmental hygiene. The record doesn't name the protagonist in that inauguration, nor does it relate the new Bureau to the 170 visits for the study of medical and surgical facilities that followed so soon thereafter. But Doctor Selby was Toledo's Health Commissioner in the years of both!

Bulletin 99 was ahead of its time; its reader potential was largely a matter of the future. Nevertheless it was well received, and before long was out of print; a copy now is almost a collector's item. To the historian, tracing the development of industrial medicine through the many and varied forms of its earlier applications, Bulletin 99 is a statistical milestone. To the biographer it is chiefly interesting as revelatory of its author. Its factual assemblies reflect a superior comprehension, and a nice appreciation of the emphasis of order. Its comments reflect sincerity, earnestness, strong convictions. Although temperately and tactfully worded, occasionally they invoke the suspicion that a degree of impatience with certain practices is being suppressed. With sensible idealism they carry along two themes: the necessity of compromise as referred to in the opening lines, and the fact that "medical service in the industries must benefit primarily the working people." And with prophetic daring they stress the need for, and the advantages of, "prevention" — this while, almost concurrently with their publication, one of industrial medicine's earliest and most illustrious pioneers was being forced to resign from the medical faculty of a prominent university because he insisted on teaching preventive medicine. In the matter of authorship Bulletin 99 was Doctor Selby's *magnum opus*. Coming at midpoint of his 30 years in Toledo, it was early omen of the future, effective notice that here was a man who would be heard from.

Thus the pre-1935 highlights of a useful and successful career, active, interesting, satisfactory in the consciousness of many things undertaken and all well done, rewarding in the recognition earned by merit. A 30-year career, sufficient unto a lifetime! But for this man it was prologue. His period of getting ready was over; the unseen Hand was putting forth with soft, unfelt persuasion.

Meanwhile, and prior to 1935, industrial medicine, branching out from the surgical axis of its beginnings, had mixed its shade with that of certain kindred, though not wholly medical, developments and forthwith had been claimed by them. Workmen's compensation, public health, safety, industrial hygiene, governmental hygiene agencies, boards of health, industrial relations departments, even management organizations, all had asserted various degrees of protective, and sometimes proprietary, interest. Medically, however, the proper parent, as it were, had been withholding recognition; industrial medicine was "just medicine." That attitude had such vogue for a while that one of its spokesmen, a physician prominent in medical organization circles, made bold to state: "There is no such thing as *industrial* medicine." A specious assertion, but it shifted the burden of proof. The charge would persist until it was disproved. It did persist; even in the mid-thirties it was still widely believed. There was evidence for the defense. A certain probative value was to be found in the fact that the industrial physicians had their own organization. But that alone was unconvincing. Established 20 years previously, its initial membership of 150 had grown to the unimpressive total of 257, with an average of 305 throughout the two decades. Better evidence was the expanding list of approvals by the American College of Surgeons. The certification of medical departments that were found to comply with the A.C.S. Minimum Standard for medical service in industry had begun in 1932, and by the end of 1934 some 975 medical departments had been surveyed, of which 518 were approved. This, however, in spite of its somewhat surprising revelation of the extent of industrial medical installations, had been disparaged because of the essentially surgical basis of the approvals. The best evidence was the existence of some scores of really outstanding medical departments, integrated, efficient, comprehensive, offering employees the best in medical and sur-

gical services, preventive, diagnostic, reparative. Many of them, notably Tom Crowder's at Pullman, William A. Sawyer's at Eastman Kodak, Cassius Watson's at A. T. & T., and Loyal Shoudy's at Bethlehem Steel, to mention only a few, dated back to the century's teens or before. Others had come later, for example, Max Burnell's at General Motors' A-C Spark Plug Division, the first medical department in America to be certified by the College of Surgeons for, among other distinctions, "its modern equipment and advanced techniques." These and their like were proof not only that there was such a thing as *industrial* medicine, but also that it filled a need in the lives of millions. By 1935 it had pretty well withstood the attacks and criticisms and indifference that had been, and to an uncomfortable extent still were, its portion, and, at least in its primarily surgical manifestation, had received the blessing of one major medical organization. It had developed its men of attainment, pioneers in its sciences, specialists in their applications, each a lifetime expert in one or more of the many involvements of the worktime environment: occupational diseases, industrial hygiene, toxicology, rehabilitation, disability evaluation, dermatology, departmental organization, medicolegal relations, everything from first aid to pathological research. In general, as a field of practice it had arrived at a certain awareness of boundaries, and a certain sense of totality within them.

All in all, this made a good case for the defense. But it wasn't being urged. Much less was it realized that it was even a better case for a positive countermove, an assertion of independence and the right to stand alone. Looking back from the lapse of time that lends the year perspective, it appears that industrial medicine in 1935 was ready to step out into the world of its larger need. What it was doing for the few millions it was ready to do for the many. But it wasn't stepping out. It seems to have needed something to push it off dead center, or someone to lead it, or both. And it seems, too, that 1935 brought it both. The record tells the story. What it was that served as the moving influence, and who it was that emerged as leader, may be identified through the events that make up the record.

In 1935 William S. Knudsen, Executive Vice-President of General Motors, asked Doctor Selby to establish, at Detroit, a Central Medical Department for the corporation. It is not important to know the circumstances under which the two men met, because it was inevitable that they would come together. Mr. Knudsen had certain problems of health and safety, not so much with any of the autonomous medical services in the widely scattered plants as, in a sense, with all of them. These problems involved the company-wide coordination of preventive and corrective measures, so as to make them of utmost and continuing benefit to all of the then quarter million (now more than twice that many) employees. A physician with special qualifications was needed. Straightway and surely the inquiries led to the one physician who had them. Doctor Selby went to Detroit, and in 1935 was installed as the corporation's first Medical Consultant. There is some evidence that he wasn't exactly enthusiastic about leaving Toledo. It meant giving up one career and beginning another, and he was 57. His acceptance, therefore, was not an instant full commitment. A "Who's Who" published in 1936 has the revealing line: "Office, temp., General Motors Corporation, Detroit; res., temp., Wardell Apts., Detroit." But as Medical Consultant he found that instead of beginning over he was only transferring his activities, and his interests, from a local or perhaps a regional area to the national stage, using what he had learned, and being himself in matters of larger importance. So he stayed, and the Wisdom that placed him there was justified of its choice.

It is unlikely that he was started off with any special assignments. The over-all situation was its own assignment, and he handled it in his own way. Quietly he set about visiting the many General Motors' physicians, and their managements. He wanted to know them, and to be known by them. He was not preceded by any reputation as a scientist, specialist, or expert, and his single claim to authorship, Bulletin 99, had long been only a title in the index. He was just Clarence Selby, wanting to get acquainted. Some of the General Motors people had met him; there had been opportunity at meetings of the industrial physicians' association. But few knew him before his visits in any way comparable to the way they felt they knew him afterward. One physician remembers thinking: "He treats me as a colleague from whom he can learn." Another recollection: "He gave no outward hint of knowledge or authority, but you felt instinctively that the knowledge was there." And still another: "His friendly, sincere, and straightforward manner was most impressive. As I got to know him better I found in him the embodiment of many of the qualities attributed to great and humble men of the past. He didn't have to 'make' friends. He was a friend." It stands as a tribute to him as an individual that the General Motors physicians, whatever their age, prestige, or experience, took to him at once. And a tribute to his genius that, without any compromise of the complete au-

tonomy of their respective situations, each of them felt that he and Doctor Selby were a team. Inevitably these many teams became one, informal, undeclared, yet closer knit than if by ceremony. "Doctor Selby's inspiring encouragement of the General Motors physicians brought to the fore their individual 'bests.' At the time of his retirement as Medical Consultant in 1949 paths were being beaten not only to his door, but also to the doors of many of the physicians he had inspired and encouraged." His General Motors Medical Conferences, bringing together each year the medical directors from most of the plants, set a precedent for the many other intracompany medical meetings that now feature the annual Industrial Health Conferences. Some 60 General Motors physicians attended his Medical Conference in 1938, nearly 100 in 1949. Doctor Selby's insistence, begun at one of his earlier Conferences, that the physical examination known as prehiring or pre-employment should be called, and really made, "selective" brought about a marked change in the thinking of management and of labor, with substantial benefits to both.

Mr. Knudsen's espousal of industrial medicine as a function of good management became nationally significant when, in 1938, as President of General Motors, he caused it to be announced that he was establishing the Knudsen Award. Concerning it he said: "There is no argument about the value of medical service in industry. The more we improve health conditions in plants the more we improve health in general. The man who has the benefits of a health maintenance program in his work must inevitably carry some part of what he learns there home with him. Many years ago I, myself, was the entire first aid department in a plant where 800 people were employed. The progress since those days has been more than tremendous, as we in industry know. With the desire to concentrate and crystallize the attention of the medical and industrial world on the wonderful progress that has been made and is being made in industrial medicine, I am glad to announce an annual Award to be given to the industrial physician making the most outstanding contribution to industrial medicine." Implicit in this announcement were Mr. Knudsen's appreciation and approval of Doctor Selby's first three years as Medical Consultant. A year later, when Doctor Selby was President of the industrial physicians' association, Mr. Knudsen himself made the first presentation of the Award at a meeting in Cleveland. This immediately followed an address by Mr. Knudsen in which he said: "We have spent over eight and a half million dollars in the last two years on health for the employees. I consider that money well spent."

All this was news, and its press coverage was extensive. It signalized, publicly and somewhat dramatically, the formal recognition of industrial medicine by big business. And there is every probability that it was one of the influences that contributed to the pickup in the progress of industrial medicine already under way, and rapidly gaining momentum. Among the evidences was the sudden increase in the membership of the industrial physicians' association. From the 257 of 1934, the number of members rose to 545 in 1938, jumped to 894 in 1939, exceeded 1,000 in 1940, and went steadily to more than 3,000 in the early fifties. Another indication was the A.C.S. approvals; these grew from the 518 of 1934, to 1,459 in 1950.

The Knudsen Award is still the highest honor in industrial medicine. Doctor Selby was its fourth recipient, in 1942. He had been preceded by Doctors C. O. Sappington (1939), Leroy U. Gardner (1940), and Royd R. Sayers (1941). His citation emphasized his "leadership in the progress of industrial medicine," and his "notable contributions relative to industrial medicine in national defense."

About a year prior to this recognition of industrial medicine by industry, organized medicine had made the first move toward acknowledging its parenthood. In late 1937 the American Medical Association established its Council on Industrial Health. Doctor Selby was appointed to the Council in March, 1938. Of the other members, a majority had specialist or consultant status rather than actual industrial experience. The Council's initial approach to industrial medicine was a bit cautious; there was manifest suspicion that its practice was close to the edge of ethics, and might step over at any time. This, however, gradually gave way, as the Council's Secretary, the late Doctor Carl Peterson, phrased it, "to a growing realization of the vast scope of industrial health and welfare," and to a program of less guarding and more guiding. Before long the Council's active participation in industrial medicine's plans and progress amounted to full recognition and acceptance by the American Medical Association, official representative of organized medicine. Year by year this has been confirmed by the preponderance of industrial medical men in the Council's membership. Doctor Selby was more instrumental in bringing this about than he will admit. But it is Council history that his wisdom and experience were constantly drawn upon. Rarely were its meetings begun until he arrived. In his own person he exemplified the dignity and integrity that industrial medicine was reaching toward. The respect he commanded was harbinger of the respect it hoped

to inspire. He was a Council member for 15 years, retiring in 1953. In that year the American Medical Association awarded him its Distinguished Service Citation.

The late thirties and early forties were busy years for Doctor Selby. Positions and appointments sought him, and he accepted where he believed he could be of service. In 1936, at the twenty-first annual meeting of the industrial physicians' association (then known as the American Association of Industrial Physicians & Surgeons) he was elected First Vice-President. His address on "Trends in Industrial Medicine, with Particular Reference to the Prevention of Occupational Diseases" *(Indust. Med.*, 5:10 (October) 1936), his first important writing since Bulletin 99, was presented there. In 1937 he carried forward its theme under the title "Industrial Preventive Medicine: A Plan for the Prevention of Occupational Diseases," this before the American Medical Association's Section on Preventive and Industrial Medicine and Public Health, at Atlantic City. In 1938, having been President-Elect of the industrial physicians' association for a year, he was installed as its President at the annual meeting in Chicago. There he read a paper on "The Physician's Responsibility in Industrial Hygiene." His term ended at the Cleveland meeting in 1939, with industrial medicine safely under the egis of industry. Meanwhile he had become identified with the work of the Conference Board of Physicians in Industry, and was continuing the Chairmanship of the American Public Health Association's Section on Industrial Hygiene, which he had assumed in 1930. At the Public Health Association's annual meeting at Detroit in 1940, his Chairman's Address was entitled "The Renaissance of Industrial Hygiene." In that year he became Consultant to the Division of Industrial Hygiene, and member of the Advisory Health Council, United States Public Health Service, continuing in these capacities until 1946. Also, he was Chairman of the A.M.A. Section on Preventive and Industrial Medicine and Public Health, 1940-41. In addition he took on the Chairmanship of the Subcommittee on Industrial Health and Medicine, Office of Defense Health and Welfare Service, which he held for two years.

In 1941, Doctor Selby's "contributions relative to industrial medicine in national defense" included a series of addresses. The first of these, "New Medical Opportunities in National Defense Industries," was given in April at Buffalo, at the annual meeting of the Medical Society of the State of New York. The second, "Industrial Medicine Marches On," was his Chairman's Address at the June meeting of the A.M.A. Section on Preventive and Industrial Medicine and Public Health, at Cleveland. In September he read a paper on "The Health of Defense Workers" at the Industrial Relations Course at Princeton University. Also in September, under the title "Industrial Health," he emphasized the importance of health in the national defense and outlined the principles of industrial practice, at a session of the Indiana State Medical Association, at Indianapolis. In October, at the Thirtieth National Safety Congress in Chicago, his subject was "National Defense Brings an Improved Industrial Hygiene Program." In 1942, he was President of the Michigan Association of Industrial Physicians and Surgeons. And, from 1942 to '46 he was Chairman of the National Reserve Council's Committee on Industrial Health.

Many of Doctor Selby's writings have remained unpublished. This, no doubt, is because they were not intended for publication. They were educational in purpose, but their aim was not to interest those already familiar with industrial medicine, but to define the field to those outside it; to picture it so clearly and unmistakably as an entity that the "kindred though not wholly medical developments" might realize that it had its own right of independence, and that their legitimate interest must be cooperative rather than proprietary or protective. It is evident from Doctor Selby's Toledo background that he was thoroughly familiar with all these kindred developments. As to each one, he knew its history, its scope and limitations, all its deep importings. It has been said of him that he possessed "a broad understanding of how to bridge the sometimes indistinct boundaries between professional disciplines." In his addresses he bridged a number of boundaries, and in so doing identified them and set their marking stakes. This must have been of great value to industrial medicine, for the recognition extended to it by other professions, public health, industrial hygiene, safety, and industrial relations, for example, became suddenly that of equal to equal. In the light of the results to which they contributed, his addresses were timely and effective. Being an author, however, was only incidental in Doctor Selby's activities. Nevertheless his writings are attractively readable. Characteristically, their style is simple, direct, factual, earnest. He makes his points in few words, but those he uses have the emphasis of conviction. A German psychologist asserts that a prevalence of adjectives indicates a state of emotional tension. If the converse be true, Doctor Selby would seem to have been consistently relaxed, particularly during the more strenuous years when most of his writing was done.

On his retirement as Medical Consultant for General Motors in 1949, Doctor Selby was succeeded by Doctor Max Burnell, Medical Director of General Motors' A-C Spark Plug Division. Only 71, Doctor Selby had his own ideas about retirement. To him it meant further usefulness. He went forthwith to Ann Arbor, where Doctor Henry F. Vaughan, Dean of the School of Public Health at the University of Michigan, had appointed him Resident Lecturer. For many years he had been interested in educational facilities for those who sought careers in industrial medicine and hygiene, and there he found the opportunity to experiment, successfully as it proved, with methods and facilities for training physicians, engineers, and nurses for service in industry. One of his special training programs was a Fellowship arrangement with General Motors, involving four months of academic training in the School of Public Health and eight months of field work in industrial plants. Another was a two-year course, with a year's residency in a hospital. His imaginative planning also found expression in an interesting new format for medical meetings. With Doctor Vaughan's cooperation, he inaugurated the "Discussional." This is an unusual, informal, unrecorded, and, except for a discussion-topic list, unprogrammed, two-day gathering of industrial medical directors and University faculty members, in a pleasant give-and-take atmosphere, where colloquy and conference pursue the "why" of many a special problem to its lair. The "Discussional" has become an institution. It is now called the "Selby Discussional," and is held annually at the School of Public Health. To the limited number who can be invited it is an event of major importance.

The last appointment accepted by Doctor Selby came in 1951 when he was named Consultant to the new Institute of Industrial Health, established at the University of Michigan by a grant of $1,500,000 from General Motors Corporation. In September of 1951, at a luncheon in Detroit, Doctor E. C. Umphrey, President of the Michigan State Medical Society, presented to C. E. Wilson, President of General Motors, to Doctor Burnell, and to Doctor Selby, Awards "symbolizing the recognition by the Michigan medical profession of General Motors' leadership and continued progress in research, service, and industrial medical education." Accepting the Award for General Motors, Mr. Wilson said: "This industrial empire has blazed the trail leading to better health for millions, both in the United States and abroad, by its activities in research and education. The Institute lately established at the University of Michigan will benefit every individual worker and the members of the profession by its teachings and investigations in prevention, diagnosis, and treatment of occupational diseases. We are proud to have had a part in raising the standards of industrial medicine to the point that this field is now recognized by the medical profession as a specialty."

Doctor Selby now resides in Port Huron, Michigan. On July 21, 1959, he was 81. His biographical sketch in the current *Who's Who in America* has as its final word, "retired." Conclusive as this seems, it is suspected that it refers mainly to appointments and positions. For, actually and figuratively, paths still are being beaten to his door. "Old age hath yet his honor and his toil"; and some who come to him bring him the one, while some bespeak his counsel in the techniques of the other.

A contemporary says of Doctor Selby that "he is one of the world's most distinguished industrial physicians and administrators." He is indeed, but that is understatement. Executive, organizer, administrator — he has been all, but it is as leader that he is most distinguished. His leadership, however, has not been always evident, for it is not the kind that leads so much as the kind that is followed, nor the kind that commands so much as the kind that inspires. And by it was loyalty engendered. Even the events with which he is associated seem to have fallen in line behind him, and the results he obtained to have grown up around him. When he went to Detroit in 1935, he looked out upon industrial medicine with a broad and seasoned perception. His experience and background had qualified him to understand its needs and appreciate their immediacy. Chief among them were medical recognition, management confidence, parity with and cooperation from related professions, less hostility from those it was designed to benefit — all these on a national basis and without the equivocations of the past. One by one, they came. Whether and to what extent he was responsible for them must be determined from the facts attendant on their coming. But it is significant that always he was there as each arrived. Upon the evidence of the medical unity he had established among the General Motors physicians, and the awareness and appreciation of their medical services he had inspired among the Division and plant authorities, it is reasonable to conclude that, on the national scene, he was the statesman-catalyst who had assembled the elements of the needed recognition, and confidence, and parity, and friendliness, and shaped them on their way.

Doctor Selby was never an exacting medical scientist, but during his 14 years at General Motors he did what few, if any, scientists could have done; he created national status for

industrial health conservation. And yet, in a way, he was a scientist. His underlying, ever-present interest was, and still is, the science of friendly human relations. With much knowledge of science in its applications to occupational health, and much respect for scientists, it can be believed of him that he hopes the technical will never obscure the human, for, after all, industrial medicine is one of the great humanities. His remarkable proficiency in the science of his choice has been instinctive as much as studied, from heart as much as from mind. "He didn't have to 'make' friends. He was a friend." When he retired from General Motors in 1949, and went over to Ann Arbor, he was aware of an abiding loyalty, on the part of physicians and nonmedical groups alike, not only to himself, but as well to the principles of health conservation he had so consistently urged.

It is impossible to compass in the catch-as-catch-can of a profile the adequate portrayal of this man — this great and gentle, wise and friendly, man. Nor does it avail to attempt the separate description of his part in the development of industrial medicine. That part was all of him. He has been one of those who, in his own words of 1919 — which he probably never thought would someday apply to him — "are giving their brains and their hearts to industry." It is hoped that he will leave to the world his autobiography. Such a legacy would enrich immeasurably the literature of the times. He is one of the very few whose professional careers are important enough to be preserved in the chapter and page of intimate narration. He is the possessor of a mind of large general powers which has been doing as it must. The leadership of the Destiny that imposed the "must" has been his kind of leadership, the kind that is followed. He followed it, to the heights of genius.

The medieval view of history is said to have been that of a drama enacted within an established pattern, the Divine pattern for mankind. Possibly, then, the view of a cultural or professional development, as a segment of history, would have been that of a drama enacted within the established pattern for that development. And so for the smaller segment of a biography, and the drama within the established pattern for a man. If the modern view rejects the pattern, what is the alternative but chaos? Here we have the drama within two patterns, one the development of industrial medicine, the other the brilliant career of one of its ablest men. Both patterns have form and line and color, symmetry and design. To assert their origin in chaos would be "to reason most absurd." They prove themselves as somewhere else established. Need it be asked by Whom?

—A. D. C.

Cholesterol Reduction

A diet so like ordinary fare that a change to it went virtually unnoticed effectively reduced blood cholesterol levels in over 300 patients at an Indiana hospital, the *Journal of the American Medical Association* reports in its May 16 issue.

The nine-month study is believed one of the largest and longest controlled tests ever done in the cholesterol field. The diet "was unique in that it represented no conspicuous departure from the general food pattern to which the patients were accustomed," the *Journal* reported.

Principal change was the substitution for other solid fats of a special margarine rich in linoleic acid which was made from nonhydrogenated corn oil. The linoleic acid content of the product, which is available only through drugstores, was 44.5 per cent, calculated on the basis of total fats.

Average cholesterol for the group at the start of the study was 250 milligrams. This dropped to 218 milligrams within three weeks on the diet using the special margarine. It reached a maximum fall of 23 per cent (to 193 milligrams) after five months, the article reported.

When patients returned to their usual fare, cholesterol levels rose 19 per cent over a three-month period, from 193 to 230 milligrams, according to the Journal paper, which was prepared by Philip A. Boyer, Jr., M.D.; James T. Lowe, Ph.D.; Robert W. Gardier, Ph.D.; and John D. Ralston, M.D.

Medically Irrelevant

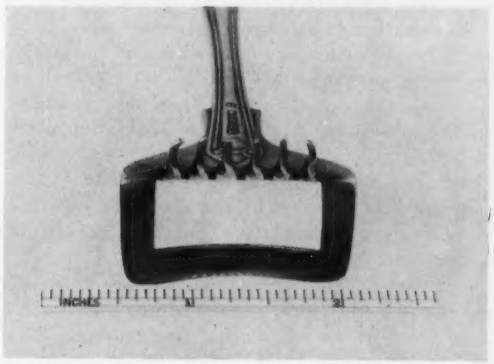
Is this a Retractor?

In April this Journal published the photograph of a group of mysterious objects that might have been mistaken for ancient surgical instruments, and requested that Journal readers attempt to identify their proper function. Since *no* reader properly reported their identification, it was later revealed that this evil looking lot of cutting devices is a set of "gaffs" used in cockfighting.

Now another object has come to hand and again identification is sought. This time the mysterious object might be mistaken for a decorative retractor. We doubt, however, that this instrument has ever assisted in any operation, with the possible exception of certain culinary ones performed on edible fowl.

Do you know what it is?

Your identification of this object should be sent to the Managing Editor, *Industrial Medicine and Surgery*, Box 44-306, Miami 44, Fla.



Letters

To The Editor:

Dr. Henry G. Morgan's letter (*Industrial Medicine & Surgery*, June, 1959) makes me wonder whether he agrees with me about what the functions and relationships of a medical department in industry are or should be.

From personal experience, I can appreciate the weighty responsibilities borne by the industrial medical director. Any corporation management worth its salt solicits, values and uses his advice. By virtue of his status and the importance of his duties, the physician should report directly to top administration rather than be under the jurisdiction of a department head who lacks the authority and responsibility for defining medical policy on a company-wide basis. The interposition of a lay intermediary does limit the scope and effectiveness of the medical department. To this extent I agree fully and freely with Dr. Morgan.

However, he seems to have ignored certain basic business principles in his zeal to obtain the recognition which is the rightful due of the industrial medical director. Granted that one of its objectives is the improvement of productivity and the decrease of operating costs — still, the medical department attains this end by giving impartial, competent, professional service to people — including management as well as labor. Any direct participation by the physician in making decisions concerning operations as a company director would make the motives of his professional conduct suspect by the labor force and vitiate the usefulness of his services. The term "company doctor" would regain all of the stigma from which enlightened medical administrators have taken great pains to dissociate themselves.

A corporation exists for the purpose of returning a reasonable profit to its stockholders for the capital furnished by them; the board of directors is their instrument. The physician's ethics may conflict with his directorial responsibilities. He should occupy the foremost rank

of experts who advise and inform the policy makers, but by no means should he be saddled with operational decisions other than those within his province as medical administrator.

Dr. Morgan seems to have confused departmental status and organizational lines of communication with the position and activities of corporate management. At least, I assume that he erred and did not intend to propose the deliberate creation of a situation where the role and tradition of the physician could be compromised or questioned.

—MORRIS A. WOLF, R.N., A.M., M.P.H.

Books

The Chemistry of Industrial Toxicology

***by Hervey B. Elkins* (New York: John Wiley and Sons, Inc., 2nd edition, 1959) $11.50, illustrated**

The author's intimate personal association with the materials and procedures of industrial toxicology pervades this concise yet comprehensive book. Competent discussions are presented on the effects of most of the toxic substances occurring in industry together with operations and extent of exposures to these materials. Tables showing data observed by the author or reported by others at representative operations constitute a valuable contribution.

Included in this second edition are some of the newer highly toxic compounds such as hydrazine, the boranes and sulfur pentafluoride. The author might well have allayed the apprehension of users of the corresponding hexafluoride by noting the inertness of this compound in the paragraph describing the lethal properties of the pentafluoride. However, the index does call attention to the listing of the sulfur hexafluoride in the table of maximum allowable concentrations.

The sections on air sampling devices and analytical methods reflect the author's own experience with them. A statement on the sensitivity of the method is useful as is the suggested means of collection of the sample. The author's novel method for determining the amount of mercury in air or urine involves reduction of the sample to the metal and measurement of the diameter of the minute droplet by microscope.

Physicians whose patients are among the many exposed to the organic phosphate insecticides or to lead compounds will be interested in the methods for determining respectively the cholinesterase activity of blood and the corproporphyrin content of the urine. To overcome the difficulty of obtaining corproporphyrin commercially for preparation of standards, Elkins describes a means of extracting it from the urine of lead-exposed workers!

Chapters are included on properties and permissible concentrations of radioisotopes and on the more common of the industrial operations involving exposure to injurious materials. The book serves as a reliable reference and leads to more detailed information in its bibliography of 555 sources.

—WARREN A. COOK

Industrial Carcinogens

***by R. E. Eckhardt, M.D.* (New York: Grune & Stratton, 1959) $6.50, illustrated**

Occupational cancer is not a serious problem for the human race as a whole; it constitutes a very small fraction of the total cancers seen in the general population. In addition, 75% of occupational cancers should be amenable to complete cure with little or no loss of time from work, disability, discomfort or medical expense. The remaining 25%, constituting bladder cancers and respiratory tract cancers in selected industries, may be associated with significant loss of time from work, discomfort, disability or even death, and considerable medical expense. Occupational cancers, therefore, can constitute a significant problem to selected segments of industry, and therefore warrant intelligent consideration and research. The principal contribution of experimental carcinogenesis to this problem is to assist the industrial physician, the industrial hygienist and industry as a whole to pinpoint the significant exposures so that they can be controlled at a reasonable cost and with the greatest assurance of success. These concepts are pursued throughout this small publication under these captions: Historical, Experimental Carcinogenesis, Occupational Cancers, Protective Programs and Medicolegal Considerations.

In the midst of comprehensiveness the author finds opportunity to explore some of the dilemmas of occupational cancer. One in particular is revealing. In the British Isles and the Continent of Europe lung cancer after exposure to asbestos is accepted as a reality of fairly common occurrence. In the U. S. consistently it is denied or doubted that exposure to asbestos is conducive to lung cancer. The author cautiously notes that there may be asbestos and asbestos. Indeed it may come about that some extraneous substance may accompany the asbestos of some other lands while none appears along with the asbestos of North America. The author states: "The most complete analysis of a large series of these cases is contained in the Annual Report of the Chief Inspector of Factories of England for the year 1954. In this report, 344 asbestosis deaths were analyzed, of which 205 were men and 139 women. Cancer of the lung was observed in 55, or 16%. Among the men, 41 lung cancers, or 20%, were observed while 14 were seen in women, or 10.1%. This

makes the male-female ratio in the general population of 5:1 or greater. It is not clear at present whether these cancers result from the asbestosis *per se*, or whether they arise as a result of some mineral impurities contained in certain forms of asbestos. Although this may seem academic, it is of importance for two reasons. First, it may help us understand carcinogenic mechanisms, and second, if some forms of asbestos do not lead to lung cancer formation, this may be extremely important from a practical and medicolegal standpoint. A recent study by Braun and Truan denies the existence of a lung cancer hazard in the Canadian asbestos industry, even though asbestosis may be observed. This suggests that the causative agent of asbestosis may be different from that for lung cancer. This lends some support to the concept of impurities present in some asbestos but not in others. Finally, since squamous metaplasia is also observed in practically all cases, it may be that asbestos only serves to produce the squamous metaplasia, which serves simply as a suitable field for some other carcinogen to produce the malignant changes. Cancer, then, would only develop where this carcinogen was present. From the medicolegal standpoint, of course, this may be unimportant since whether lung cancer is produced or only promoted by asbestos would have little significance."

Company Climate and Creativity

(New York: Deutsch & Shea, Inc., 1959) $10.00

This book was not written for industrial physicians. It is addressed to management and is concerned with the creation of a work atmosphere conducive to the nutrition of creativeness particularly in those devoted to research. Yet the industrial physician has much to contribute to the fostering of the creative by making sure that the work environment is free from affronts to health both physical and mental. Three excerpts from the many that are provocative reflect the contents of the entire volume:

"Dr. Fred C. Finsterbach, Education and Training Consultant: 'Our culture, from the nursery to the grave, strives for uniformity and conformance. All of our institutions strive to enforce systems of control. He who questions, far from being revered, is often reviled. The way is made hard for the innovator and woe awaits the maverick. Perhaps the struggle against these odds is a necessary element of creativity. If there were no struggle, perhaps the urge would die. This has not as yet been tested in our culture. Creativity has always had to struggle, thus we do not know what would happen if obstacles were removed.'

"The majority of panelists found that our cultural climate contained several factors that operated to inhibit creativity. Most often mentioned was the strong pressure for conformity with its corollary, the widespread fear of being 'different.' Many felt that the emphasis on teamwork, in itself an expression of the conformist temper, tended to dry up the most vital source of creativity, the individual pursuing in privacy the paths opened up by his own imagination, talent and personal history. Several also felt that the dominant values of our culture — the emphasis on material success — tended to direct many of our talented people into avenues where gain and prestige were greater and came more swiftly than in disinterested, speculative pursuits required for basic advances in sciences.

"If the managements in these companies sincerely desire creativity, the panelists (the 105 outstanding authorities which presented their views to make up this publication) imply, then they can, by being responsive to the particular needs and requirements of creative personnel, establish a favorable climate."

In some measure this book fails to impose upon him whose creativeness is to be fostered a proper degree of responsibility for his own creative development. Once more this calls for the telling of the old story of the farmer who determined to carry out his own research in the nutrition of his pigs. For his purpose he selected six young pigs all of one sex and all of one litter. The number included the runt of the lot to serve as the control. To pig number one in his separate pen he furnished as food only the waste of the house, the swill. Pig number two was provided the same lot of swill plus some roughage dear to porcines. Pig number three received better fare. He was given a limited amount of grain plus forage. Pig number four was supplied with all the grain he would eat. Five was pampered with all the grain he might consume but along with this was given a generous allotment of carefully selected additive vitamins and minerals. The last, the runt, was given nothing. There he was in his pen with no food at all.

After five months came the day of reckoning. Pig number one had fared pretty well. He had gained a modest 60 pounds. Number two as expectable weighed in at 75. The first of the better-fed ones registered at 96 pounds. Pig number four outdid himself at 120. The pampered number five proved the worth of special treatment by his weight of 142 pounds. Then came the control with no food at all. The farmer barely could have a look expecting to see a miserable lot of immature whitening bones. Then came his astonishment. The runt had achieved a mighty 167 pounds. Then the farmer discovered that by misadventure he had left a hole in the pen.

Oftentimes true creativeness needs only a hole in the pen.

INDUSTRIAL MEDICINE AND SURGERY

ESTABLISHED 1932

Editor, CAREY P. McCORD, M.D.

Managing Editor, JOHN A. LAWRENCE

Consultant Editors:
CHARLES E. DUTCHESS, M.D.
CHESTER C. GUY, M.D.
SEWARD E. MILLER, M.D.

Associate Editors:
L. E. HAMLIN, M.D.
EDWARD C. HOLMBLAD, M.D., F.A.C.S.
RAYMOND HOUSEHOLDER, M.D.
RUTHERFORD T. JOHNSTONE, M.D.
HEDWIG S. KUHN, M.D.
ROBERT T. LEGGE, M.D., F.A.C.S.
CHRISTOPHER LEGGO, M.D.
M. N. NEWQUIST, M.D.
ROBERT COLLIER PAGE, M.D., F.A.C.P., M.R.C.H.
OSCAR A. SANDER, M.D.
GERRIT W. H. SCHEPERS, M.D.
JAMES K. STACK, M.D., F.A.C.S.
ROBERT M. WATROUS, M.D.
REX H. WILSON, M.D.
EDWARD R. ASTON, D.D.S.
WARREN A. COOK, A.B.
WILLIAM B. DEICHMANN, Ph.D., F.R.S.
HENRY FIELD SMYTH, Jr., Ph.D.
WILLIAM P. YANT, D.SC.

Overseas:
DR. AXEL AHLMARK, Sweden
PROF. DR. MED. E. W. BAADER, Germany
DR. H. P. DASTUR, India
DR. JOHN F. EUSTACE, Ireland
DR. DOUGLAS GORDON, Australia
DR. H. O. HOFMEYR, Union of South Africa
DR. ARTHUR ERNESTO MONIZ, Portugal
PROF. DR. GIOVANNI PANCHERI, Italy
PROF. DR. JOSE PEDRO REGGI, Argentina
DR. RAFAEL PENALVER, Cuba
DR. A. SALMONT, France
DR. PERTTI SUMARI, Finland
DR. MASASHI SUZUKI, Japan
DR. A. R. THOMPSON, England
DR. A. UYTDENHOEF, Belgium

August, 1959

VOLUME XXVIII

NUMBER 8

Pilfering in Industry

This year 200 firms will go out of business because of thievery of products, parts and tools by employees. The survivors will foot a billion dollar loss from these criminal acts. One well known department store calculates that yearly it faces a loss of 800,000 dollars from pilfering of its goods by trusted employees.

The thieving employee eases his conscience or erases his guilt by believing that a big corporation suffers little by the disappearance of a few objects he needs in his home or may sell to his neighbors. Or these thieves may reach the belief that they are not paid in wages what their services are worth so a little leveling off of the imagined inequity is achieved through stealth.

The corporation, itself the victim, through its management is not without its contribution to thievery. Many firms openly calculate that the cost of theftproof procedures cost more than the theft losses. In the presence of known culprits few firms will prosecute, fearing the vengeance of a sympathetic element in the work force, even fearing suits for malicious prosecution in the event of acquittal of the known culprits by softhearted courts. So at inventory time many tens of thousands of dollars are charged off to "shrunken inventory." The loss is passed along to the buying public. The entire country becomes the loser.

Still, thievery is thievery; crime is crime. Every thief is a mentally sick person. In any factory force some 20% of all workers are mentally ill. The thieves are recruited from that lot. Few factory pilferers are aware that they are dishonest. Therein lies the major evil. Little thieves become major and frequent thieves. This form of mental illness is progressive. Every condonement by management of "carrying" contributes to adult delinquency.

Fundamental to much factory pilfering is disloyalty to the employer. The now far spread worker disloyalty is no inherent attribute. It is provoked. But there are many provocations. Wherever the workman has come to identify himself, his needs, his opportunities with his employment, disloyalty fades.

There is no end to miracles that the industrial physician is called upon to achieve. It may be too much to expect the plant physician to curb all factory pilfering. Yet he has a role to play—and a major one. If this medical miraclemaker may eliminate mental disease from the 20% of the work force troublemakers, factory stealing will disappear. In the meanwhile a few fearless prosecutions of the known, more vicious culprits may work wonders. The enforcement of discipline is a salutary form of mental therapy.

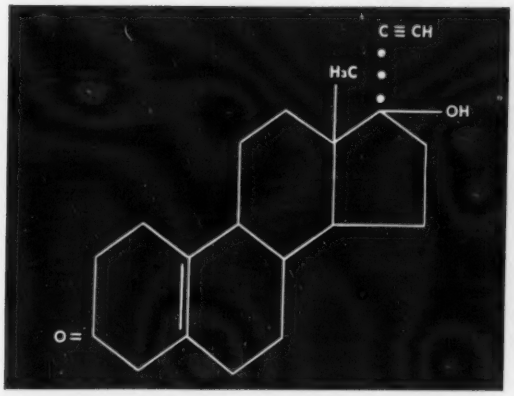
...threatened abortion

...habitual abortion

...endometriosis

ENOVID®

EXERTS NO ANDROGENICITY



NORETHYNODREL,
the principal constituent of Enovid, is the only progestin with the double bond in the position shown, thus differing from androgens and estrogens. Norethynodrel possesses intrinsic estrogenicity (3 to 7 per cent that of estrone) in addition to its potent progestational activity.

Thus, its administration is free of risks of virilism even on long-term administration at high dosage.

Each 10-mg. tablet of Enovid contains 9.85 mg. of norethynodrel and 0.15 mg. of ethynylestradiol 3-methyl ether. (—The estrogen is added in optimal amount to avoid breakthrough bleeding during prolonged use.—)

NORETHYNODREL...

1. The only steroid[1] with both progestational and estrogenic effects.
2. Retains its biologic integrity[2] following oral administration.
3. Is progestational and estrogenic in experimental animals.
4. Is progestational and estrogenic in clinical practice.
5. Is not androgenic[3] in experimental animals.
6. Is not androgenic[3] in clinical practice.

Enovid represents a positive advance in the treatment of threatened or habitual abortion[4] and in the treatment and control of endometriosis[5]. Physicians may prescribe Enovid confidently without producing androgenic manifestations.

DOSAGE OF ENOVID FOR THREATENED ABORTION

Two or three tablets daily on appearance of symptoms. This dosage may be reduced to one or two tablets daily when symptoms disappear. The reduced dosage should be continued to term and increased if symptoms reappear.

DOSAGE OF ENOVID IN HABITUAL ABORTION

Two tablets daily as soon as pregnancy is diagnosed and continued without interruption at least through the fifth month. Enovid may be safely continued to term if desired.

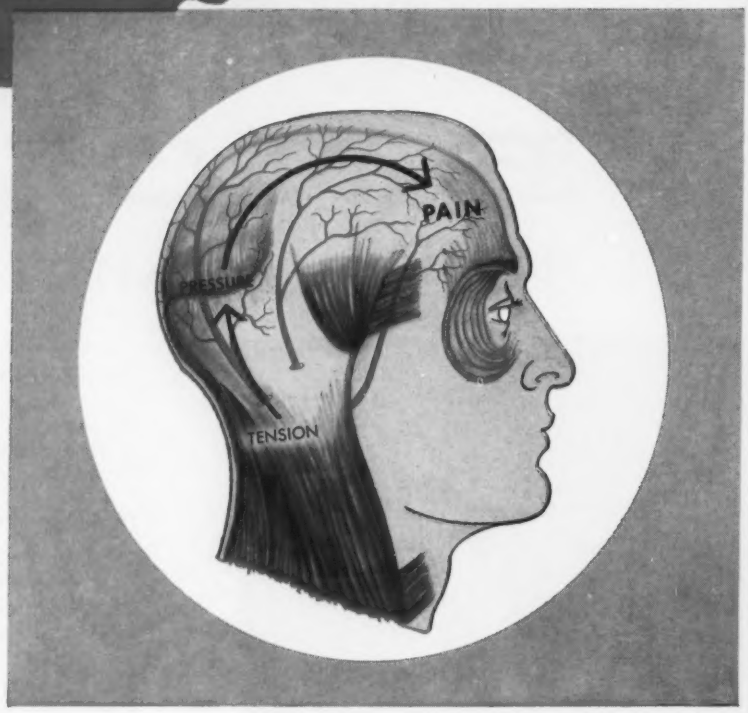
DOSAGE OF ENOVID FOR ENDOMETRIOSIS

The daily dose for the first two weeks is one tablet, two tablets daily for the next two weeks, then three tablets daily for the following two weeks and finally four tablets daily for three to nine months.

G. D. Searle & Co., Chicago 80, Illinois, Research in the Service of Medicine.

1. Symposium on New Steroid Compounds with Progestational Activity, Ann. New York Acad. Sc. 71:483-805 (July 30) 1958.
2. Edgren, R. A.: The Uterine Growth-Stimulating Activities of 17α-Ethynyl-17-Hydroxy-5(10)-Estren-3-One (Norethynodrel) and 17α-Ethynyl-19-Nortestosterone, Endocrinology 62:689 (May) 1958.
3. Rakoff, A. E.: Pages 800-805 of reference 1.
4. Tyler, E. T., and Olson, H. J.: Pages 704-709 of reference 1.
5. Kistner, R. W., Endometriosis, in Conn, H. F. (editor): Current Therapy – 1959, Philadelphia, W. B. Saunders Company, 1959, pp. 610-612.

Better Total Effect



* *in alleviating pain of*

TENSION HEADACHE

The rationale for Anacin in relieving pain of tension headache is quickly discernible. Anacin exerts a *better total effect* in pain-relief than aspirin or buffered aspirin. Anacin not only relieves the pain but also lessens emotional tension, psychic agitation and anxiety — leaving the patient more relaxed. Excellent tolerance. There is no gastric upset with Anacin.

* **ANACIN®**

WHITEHALL LABORATORIES

NEW YORK, N.Y.

COMMENT AND OPINION

Monkeys of the World, Unite!

Brain surgery followed by intensive speech training may eventually permit monkeys to replace human workers in factories, says scientist Sir Ronald Fisher, Cambridge University, England. If the monkeys do well on the assembly line, Sir Ronald sees them eventually puttering around private homes as butlers, valets and servants.

—*Industrial Relations News*, July 4, 1959.

Million Dollar Occupational Health Building

Official opening of the million dollar Industrial Medicine Building, Wayne State University, Detroit, Michigan, will be September 1, 1959, according to Dr. Arthur Vorwald, professor and chairman of the department.

"In connection with ceremonies dedicating this building, we hope to have a one day symposium on Occupational Health. Both local and national officials who have an interest in occupational health will be invited."

Research to be conducted in the building will include study of atmospheric pollutants, including radioactive substances and vehicular health hazards pertaining to certain occupations.

Two floors are especially designed and equipped for radiation studies.

The four-story building will have a laboratory for study of exhaust fumes on the first floor with an entrance for automobiles.

Classes for undergraduate and graduate students in occupational health areas will be held in the new building.

—Wayne State Univ. College of Med. *Bulletin* 5:3, 1959.

Sick Leave Abuse

City employees of Houston, Texas, who claim sick leave when they aren't ill face dismissal, Civil Service Director Sherwood Crane has announced. A survey shows that about 25% of city employees abuse their sick leave privilege. The worst abuse, Crane said, is on Fridays and Mondays. The next is before or after a holiday. Third is right after pay day.

Since July 1, Crane said, telephone calls have been made to the homes of those absent from work.

Crane said that habitual absentees take their sick leave as fast as it accumulates.

—*Houston* (Texas) *Chronicle*, June 23, 1959.

Medical Care for Labor

Quality low-cost medical care for organized labor is demanded by William F. Schnitzler, AFL-CIO secretary-treasurer. To get comprehensive care, unions plan to work directly with physicians, hospitals and established health insurance plans, Schnitzler says. Their reason: agencies such as Blue Cross and Blue

An EDGE on them all
Cutting efficiency and maximum blade performance has always been the surgeon's first consideration when choosing a surgical blade. BARD-PARKER offers you a blade made with the same consideration in mind . . . a blade of carbon steel of course . . . so superior for fine cutting edges.
B-P RIB-BACK Blades are now available . . .
in the Puncture Proof Sterile Blade package that can be autoclaved.
PULL APART
B-P
STERILE Rib Back BLADE
in the RACK-PACK package—blades pre-racked ready for sterilization.
in the CONVENTIONAL package—six of one size in a rust-proof wrapper.
It's Sharp
Ask your dealer
B-P
BARD-PARKER COMPANY, INC.
DANBURY, CONNECTICUT
A DIVISION OF BECTON, DICKINSON AND COMPANY
B-P • RIB-BACK • IT'S SHARP • RACK-PACK are trademarks of BARD-PARKER

Shield are "inadequate" for workers. "Doubling the premium does not double (their) financial protection," says Schnitzler, "and . . . may very well do nothing at all to improve the kind of medical care that people get."

The AFL-CIO, Schnitzler notes, has already asked Congress to grant tax relief to foundations that back nonprofit health plans. Labor is also supporting the Humphrey Bill, authorizing Federal loans to health groups for buildings and equipment, Schnitzler says. —*Industrial Relations News*, July 4, 1959.

Awards Hurting Employment?

Workmen's compensation awards in cases not involving occupational injuries and disability, hinder the hiring of physically handicapped employees in many states, a Wausau, Wis. nurse claimed.

"It's a sorry state of affairs," asserted Miss Helen Reischl, director of occupational health nursing for Employers Mutual Liability Insurance Co.

She was a panelist at an occupational health nursing session at the Mayo Hotel. The two day industrial nurses conference was sponsored by the Oklahoma State Nurses Assn.

"Management is taking a closer look at physical examinations," she said, "because they don't want to be stuck with any more than they have to."

Miss Reischl's claims were supported by B. K. Melekian, Industrial Relations Director at Douglas Aircraft Co. of Tulsa.

"If we are to hire the handicapped," Melekian said, "then industry must be protected — not from the physically handicapped — but from the few who will abuse the privileges given to them."

Adding to the aircraft industry's problems in hiring the handicapped, he said, are negotiations with unions.

"Either we have a feast or famine in the aircraft industry," Melekian said. "There are too few people to do the work, or too many people with little to do.

"So, when we have to add 300 people, you can see why management doesn't want to take unnecessary risks."

The conference closed with a discussion of orthopedic industrial injuries by John E. McDonald, M.D., of Tulsa.

—*Tulsa* (Okla.) *Tribune*, April 6, 1959.

Probing Fatigue

An American insurance company has set up a research center near Boston to find out what makes industrial workers tired, and therefore more susceptible to accidents. "Fatigue psychologists" and "loss prevention engineers" ply their trades at the center to discover ways of reducing the monotony of continuous similar occupations.

Scientists at the center have produced a performance indicator, which measures a person's reaction time while performing a monotonous task and indicates drowsiness or dropping efficiency.

"The device," explained the head of the research center, "can indicate the onset of what we call 'funtional fatigue' by pinpointing significant changes in the reaction time of the in-

PSORIASIS

distressing to the patient

perplexing to the doctor

RIASOL®

clinically tested ▸
ethically promoted ▸
safe and effective ▸
easy to use ▸
maximum assurance ▸
against recurrence and adverse reactions

WRITE for PROFESSIONAL SAMPLE and LITERATURE

AVAILABLE
at pharmacies or direct
in 4 and 8 fluid ounces

COMPOSITION
RIASOL contains 0.45% Mercury chemically combined with soaps, 0.5% Phenol, 0.75% Cresol.

SHIELD LABORATORIES
Dept. IM-859
12850 Mansfield Avenue • Detroit 27, Michigan

dividual being tested. This method will enable us to evaluate the influence of working environmental factors on operational fatigue, and it promises new ways to attack one enemy of industry — the accident."

Industrial accidents are a common target for both labor and management. There is an element of personal risk involved in even the most motionless occupations, and the majority of industrial employees are subjected to the uncertainties of mechanization. Most industries long ago recognized the value of instituting safety programs, and consistently strive for better results.

Insurance companies — which foot most of the bill for industrial accidents — are naturally interested in minimizing the opportunity for carelessness. And carelessness is often the result of fatigue, either mental or physical.

Thus far, the research center at Hopkinton, Mass., is believed to be the only one of its kind. The accomplishments already chalked up there, and those which seem certain to follow, may provide the impetus for further efforts by insurance companies and others to reduce the accident potential in industry. Management, labor and the public all benefit from such programs.

—*Lockport* (N. Y.) *Union-Sun-Journal*, March 28, 1959.

Ho-Hum

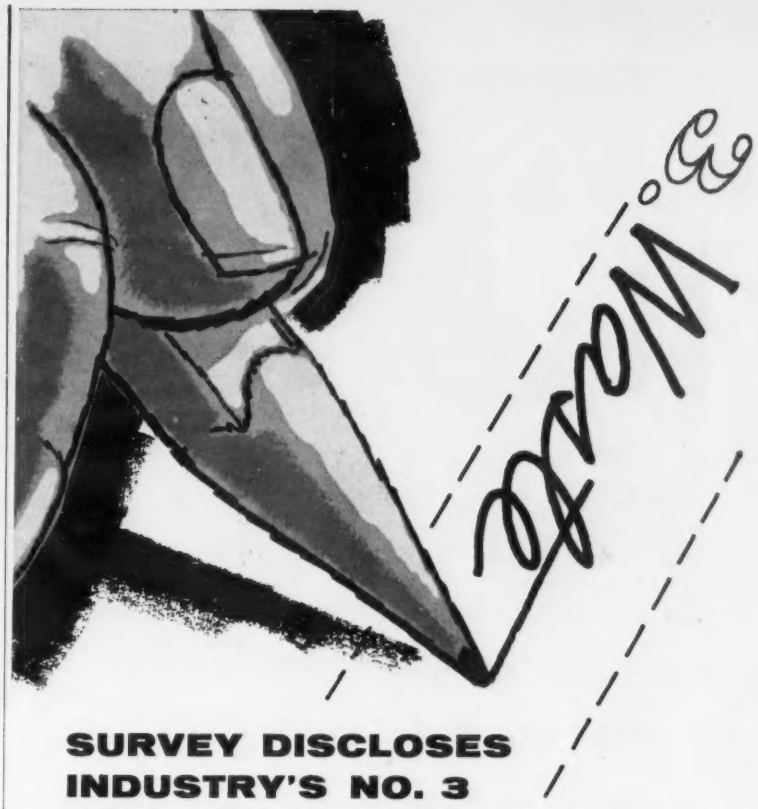
A five minute break every hour can cut fatigue caused accidents on monotonous jobs, says *National Safety News*. For less intensive work, a 10 minute rest and snack period twice each shift is suggested.

Work accidents occur most often from 10 a.m. to 11 a.m. and 3 p.m. to 4 p.m. Poor ventilation, lighting and housekeeping increase accident possibilities during the peak fatigue hours.

—*Industrial Relations News*, May 30, 1959.

Attendance Roundup

Absenteeism cost $200,000 in wages last year, reports Hollinger Consolidated Gold Mines Ltd., Timmins, Ont., Canada. A study of Hol-



SURVEY DISCLOSES INDUSTRY'S NO. 3 SKIN HYGIENE PROBLEM: WASTE SOAP

Here's The Answer To It From SBS

The most difficult three industrial skin hygiene problems, as rated by 2,177 major plants recently surveyed, are:

1. *SKIN DISEASE*
2. *REMOVAL OF TOUGH SOILS*
3. *WASTE OF SOAPS*

Closely associated with the actual problem of skin disease is the costly waste of soaps in *all* plant areas. Liquid soaps run off hands too easily, other types melt or spill. Where wasted soap accumulates, extra housekeeping expenses are involved, sub-sanitary conditions exist and worker dissatisfaction mounts. Often the combined cost of soap waste and resulting maintenance can add up to more than the original cost of the soap supply. Small wonder industry rates it as such a problem!

What's the answer to it? Ask an SBS representative to show you "Operation Pinpoint", 10 minute sound slide digest of the national survey, and you'll see how a *planned corrective program* can solve all these skin hygiene problems. Since SBS produces a *complete range of cleansers*, he can suggest the right cleanser for each job. For the safest, savingest answer to skin disease, tough soils, and soap waste, write today . . . Dept. 7H.

the washword of industry

SBS sugar beet products co.

SAGINAW, MICH. • Los Angeles, Calif. • Newark, N.J

CANADA: Chemical By-Products, Ltd., Toronto, Ontario

For Quality without Question... Enjoy the unique refreshment of sparkling Coca-Cola

SIGN OF GOOD TASTE

linger's records indicates 6.2% of all employees are responsible for 40% of the absenteeism . . . Perfect attendance records were achieved by 16.1% of its 21,000 workers last year, reports Sylvania Electric Products Inc., N. Y. A four page feature in the Sylvania Beam, company house organ, pictures workers with 10 or more years service who have never been absent.

—*Industrial Relations News*, June 20, 1959.

Dishonest Applicants

Over 12% of all job applicants are dishonest, reports Bates Associates, White Plains, N. Y. Of 25,000 job applicants investigated in the last two years, around 3,000 were found to have falsified their employment forms. The top five "dishonesties," listed in this month's Personnel Journal are: failure to list jobs left under undesirable circumstances, unreported police records, unlisted law suits and financial difficulties, inability to cooperate with other workers and a record of alcoholism coupled with poor attendance.

—*Industrial Relations News*, June 20, 1959.

This Was No Accident

A female worker's accident claim, filed against her employer for allegedly fathering her child, was dismissed by the California Industrial Accident Commission. The Accident Commission held that the worker's pregnancy did not constitute a valid "injury incurred in the course of employment."

—*Industrial Relations News*, June 27, 1959.

Index of Advertisers

American Cyanamid Co. 17, 18
American Tobacco Co. . .43
Armour Pharmaceutical Co. 2, 21, 30
Arnar-Stone Laboratories 10
Bard-Parker Co., Inc. . . .37
Becton, Dickinson & Co. . .20
Bristol-Myers Co. 32
Bullard Co., E.D. 46
Burdick Corp. 44
Coca Cola Co. 40
Desitin Chemical Co. . .42
Dome Chemical Co., Inc. 48
Eaton Laboratories . .15, 24
Ille Electric Co. 46
Irwin, Neisler & Co. 5
Lilly & Co., Eli 34
McNeil Laboratories, Inc., 11, 27, 28, 29, 45
Parke, Davis & Co. 31
Pioneer Rubber Co. 44
Riker Laboratories, Inc. 2nd Cover, 16
Robins Co., Inc., A. H. . .13
Roerig & Co., J. B. 19
Searle & Co., G. D. 35
Shield Laboratories 38
Smith, Kline & French Laboratories 47
Squibb & Sons, E. R. 12, 33
Sugar Beet Products Co. 39
Tailby-Nason Co., Inc. . . 9
Titmus Optical Co. 22
Wallace Laboratories 1, 23, 41, 4th cover
Warner-Chilcott Laboratories, Inc. 14, 3rd cover
Whitehall Laboratories 25, 36
Winthrop Laboratories . . 7
Woodward Medical Personnel Bureau 46
Wyeth Laboratories, Inc. 26

CONTROL G.I. SPASM
PRE and POST OPERATIVELY

Milpath®

®Miltown + *anticholinergic*

direct antispasmodic action
at the peripheral level
plus control of anxiety and
tension at the central
level... without the dry
mouth, blurred vision or
loginess associated
with belladonna, bromides
and barbiturates.

now <u>two</u> forms for adjustable dosage

MILPATH-400—Each yellow scored tablet contains meprobamate 400 mg. and tridihexethyl chloride 25 mg. Bottle of 50.

DOSAGE—1 tablet t.i.d. at mealtime and 2 at bedtime.

MILPATH-200—Each yellow, coated tablet contains meprobamate 200 mg. and tridihexethyl chloride 25 mg. Bottle of 50.

DOSAGE—1 or 2 tablets t.i.d. at mealtime and 2 at bedtime.

WALLACE LABORATORIES *New Brunswick, N.J.*

thanks to

DESITIN®

hemorrhoidal

SUPPOSITORIES

with cod liver oil

Samples and literature available from

DESITIN CHEMICAL COMPANY • 812 Branch Ave., Providence 4, R. I.

This story is right under your nose

This is the story of cigarette paper. Though you'd never notice it, the two sides of this paper are different in texture.

When your cigarette burns, this difference causes the paper to curl in slightly toward the tobacco. This crimping action helps hold the tobacco in place, keeps the paper itself from flaking off.

The American Tobacco Company's Department of Research and Development had a substantial part in the improvement and perfection of this special, pure-flax fiber paper. Today, it is used on all our cigarettes. But our scientists haven't lost interest in it. Now their job is to guard the quality of all the paper we use. So daily tests are carried out for uniformity, whiteness, porosity, burning rate and freedom from flaws.

The story of cigarette paper is one episode in American Tobacco's long history of experience with tobacco. It's another illustration of the care we take to make cigarettes of matchless quality.

The American Tobacco Company

FIRST IN CIGARETTE RESEARCH

LUCKY STRIKE • PALL MALL • HIT PARADE • HERBERT TAREYTON • DUAL FILTER TAREYTON

Rx For Industrial Hand Dermatitis

PIONEER
Liquidproof Industrial Gloves

All Neoprene Stanzoils®
give liquidproof protection in 103 basic oils, acids, caustics, greases and solvents.

Neoprene Coated Pacemakers
Pylox Coated Stanflex®
coated cloth gloves that combine abrasion and liquid resistance.

Rubber or Neoprene SheerGrip®
All Pylox Nimble Fingers(TM)
For intricate assembly work where dexterity and sensitivity are essential.

Knit Cotton Lined or Flock Lined Neoprene Stanzoils®
Lining is permanently bonded to the liquidproof neoprene exterior, eliminating separate glove and liner.

Mail Coupon For Patch Test Kits

The PIONEER Rubber Company
106 Tiffin Road, Willard, Ohio

Please send me (no obligation):

☐ Patch Test Kit #8—1 centimeter diameter glove material discs

☐ Pioneer Industrial Glove Catalog

Name.....

Address.....

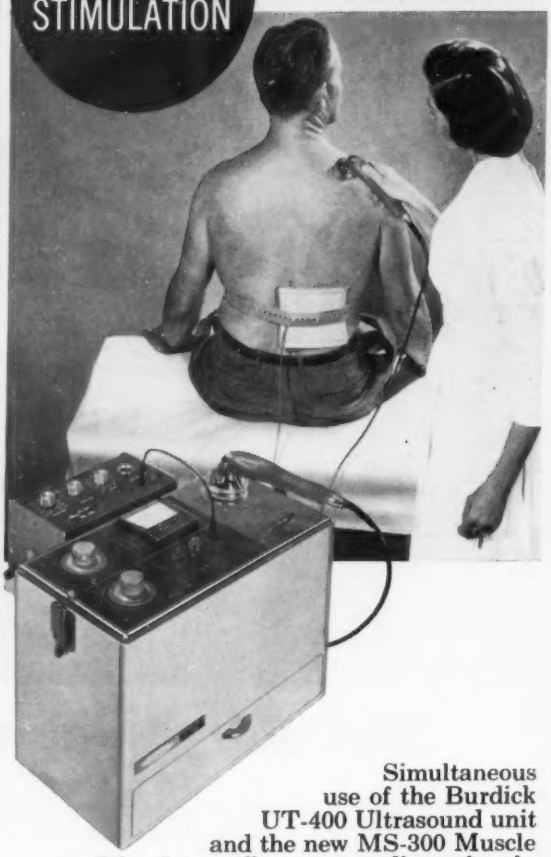
City.....Zone.....State.....

simultaneous application of

CONTINUOUS OR PULSED ULTRASOUND

and ELECTRICAL STIMULATION

BURDICK'S { UT-400 / MS-300 COMBINATION



Simultaneous use of the Burdick UT-400 Ultrasound unit and the new MS-300 Muscle Stimulator offers a new dimension in ultrasonic therapy—combining the massage action of electrical stimulation with the established physiological effects of ultrasound.

For complete information call your Burdick representative or write us.

The MS-300 Stimulator has been approved by the F.C.C. for use in conjunction with the UT-400 Ultrasound unit.

Burdick

THE BURDICK CORPORATION

MILTON, WISCONSIN

Branch Offices:
New York • Chicago • Atlanta • Los Angeles
Dealers in all principal cities

"Deformity in rheumatoid arthritis develops in two stages. The most obvious is joint destruction. But even earlier... muscle spasm...has insidiously started to lead to deformity."[1]

in rheumatoid arthritis...

PARAFON* with PREDNISOLONE

provides spasmolytic, anti-inflammatory, and analgesic action

dosage: One to two tablets three or four times a day.

supplied: Tablets, scored, buff colored, bottles of 36. Each tablet contains PARAFLEX® Chlorzoxazone† 125 mg.; TYLENOL® Acetaminophen 300 mg.; and Prednisolone 1.0 mg.

precautions: The precautions and contraindications that apply to all steroids should be kept in mind when prescribing PARAFON WITH PREDNISOLONE.

1. Swanson, J. N.: Canad. M. A. J. *79*:638 (Oct. 15) 1958.

McNEIL

McNEIL LABORATORIES, INC • PHILADELPHIA 32, PA.

*Trade-mark †U.S. Patent Pending

25SA59

OUR 62nd YEAR

WOODWARD MEDICAL PERSONNEL BUREAU

FORMERLY AZNOE'S

185 N. Wabash - Chicago, Ill.

Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

Telephone: RAndolph 6-5682

POSITIONS WANTED

Medical Director: Diplomate, Int Med; 4 yrs Mayo fellow, acting as 1st Asst Perpipleural Vascular disease, Path, Int Med; 4 years exper as Internist; 3 yrs, Medical Director, important co; recipient, Citation Award, Indus Med Association; seeks New York area.

Medical Director: Teaching Fellow, short time, Indus Med, Univ of Mich; 14 mos, Indus Staff phys; 18 mo, Indus Med dir; 2 yrs general priv pract; lic'd Ohio, Indiana; prefers Central or Midwest; age 33; immediately available.

Medical Director: 7 yrs, Medical Director, heavy industry; 8 yrs, Medical Director, major co; highly qual'd all phases, Indus & Preventive Med; member, State Med Society's committee on Indus Hlth; will consider Asst Directshp, very lge co, semi-heavy, heavy or Chem indus with good advancement potential; prefers East; references unite in outstand'g commendations.

Medical Director: MPH; 10 yrs experience, indus med; exceptionally qual'd, industrial hygiene; prefers New England, California or foreign; speaks French & Spanish; middle 40's; immediately available.

Medical Director: 2 years, medical officer, USAF; 6 years, senior indus phys, lge, important corp; seeks Medical Dirshp, preferably in chemical with radiation problems; prefers Tennessee or South; Age 33.

Medical Director: Seven years, group practice; now seeks Industrial Med position with opportunity do surgery; any location; Age 36.

Assistant Medical Director: 1 year, Int Med res, large, outstanding hosp; 5 yrs, Assoc phys—Director, 3 plants of large, nationally-known co; 1 yr, fellow, Harvard School of PH., including Indus Med & Atomic Energy wk; 1 yr, priv pract; any location; prefers SW; Age 39.

Internist: Military obligation fulfilled; seeks Indus Med position, group practice; prefers New England area; Age 34.

Staff Physician: 3 yrs, general res; 1 yr, Int Med res; 2 yrs, Assoc in Genl & Obgyn pract; 1 yr, Indus phys, lge corp; seeks Indus Med, West, prefers Calif; Age 37.

Staff Physician: Two years, Director, Blood & Plasma center; three-and-one-half years, private, general practice; 3 yrs, Medical Ofc, USAF; seeks Indus Med in SE, SW or California.

Staff Physician: 1 year, rotating internshp; 2 yrs, Battalion Surg, US Army; 3 yrs, Industrial Med residencies; seeks Industrial Medicine position; SW or Calif; Age 30.

Staff Physician: Graduate, Hahneman Medicine; 5 yrs, private practice; 2½ years, hosp phy & psy; 3½ yrs, phy—some publ hlth wk; seeks Indus position; desires Ohio, perhaps foreign appointment; late 30's.

Staff Physician: 2 yrs, medical officer, USAF; 1 yr, private practice; 2 yrs, Asst Phy, important foundation hospital; 1½ yrs, general clinic practice; seeks industrial medicine post in Florida, Alabama or Georgia only; Age 37.

Staff Physician: Emphasis on Allergy; 3 yrs, plant & staff phys, Board of Public Health; 5 yrs, Asst, Medical Schl Allergy Clinic & Medical Examiner, numerous insur co's; Board Qualified, Allergy; Academy member; late 30's; lic'd N.Y., N.J., California; any locality; immediately available.

POSITIONS OPEN

INDUSTRIAL POSTS: (a) Medical Director; lge rubber co; comprehensive med program; good facils; excl sal & benefits; SW. (b) Staff; division leading corp; 20,000 emplys; sal & fringe benefits; city 200,000, MW. (c) Trained, Medicine; important company; $14,000; vic Omaha.

ILLE: A DISTINGUISHED NAME IN HYDRO- AND PHYSICAL THERAPY EQUIPMENT

←

HM-655
COMBINATION ARM, LEG or HIP UNIT (Stationary)

For subaqua therapy. Stainless steel tank with electric turbine ejector and thermostatic mixing valve.

MA-105 →
MOISTAIRE HEAT THERAPY UNIT

Delivers temperature-controlled moist heat safely and effectively. Complete with stainless steel treatment hood, table, latex foam table pad, nylon moistureproof curtains and 4-quart filling can.

ILLE ELECTRIC CORPORATION
Reach Road, Williamsport, Pa.

INSTANTLY INACTIVATES CHEMICALS IN THE EYES OR SKIN

NEUTRALIZE/Bullard

Where speed is so critical in the emergency treatment of acid or alkali splash in the eyes, *Neutralize* works many times faster than water dilution. Neutralize buffering action rapidly inactivates effects of chemical irritants. In 4, 8, 32 ounce and 1 gallon plastic bottles and 5 gallon plastic cubitainer with flow tube.

Write for data sheet.

E. D. BULLARD COMPANY
Sausalito, California

how you can help your organization reduce

the terrible cost[$] of dysmenorrhea

More than a third of all young women in America are afflicted with disabling dysmenorrhea. Each year, 140 million working hours are lost because of it.

You can cut lost time in your organization by making sure 'Edrisal' is in the dispensary. A combination of Benzedrine® Sulfate—which is both antidepressant and antispasmodic—and two highly effective analgesics, 'Edrisal' is virtually specific in dysmenorrhea.

It relieves the depression, the cramps, the pain.

Order 'Edrisal' today and save countless working hours now being lost to dysmenorrhea. 'Edrisal' is available through regular drug channels in bottles of 50 and 500 tablets.

Formula: Each 'Edrisal' tablet contains: 'Benzedrine' Sulfate (brand of amphetamine sulfate), 2.5 mg.; aspirin, 2.5 gr.; phenacetin, 2.5 gr.

EDRISAL®

ANALGESIC • ANTISPASMODIC • ANTIDEPRESSANT

two tablets every 3 hours

Smith Kline & French Laboratories, Philadelphia

MEDICAL DIRECTORS
INDUSTRIAL HYGIENISTS
SAFETY ENGINEERS

The House of DOME *World Leader in Dermatologicals*
announces the establishment of its new Division for the distribution of unique and original Dermatologicals for the treatment and prevention of INDUSTRIAL DERMATOSES at TREMENDOUS PRICE SAVINGS

DERMATOLOGICALS FOR INDUSTRY, UNLIMITED

for direct sale to industrial clinics only.

PRODUCTS AVAILABLE

- Wet Dressings
- Tars
- Fungicides
- Protective Cremes
- Soap substitutes - for cleansing
- Acne Products
- Psoriasis Products
- Vitamins
- Feminine Hygiene - Products
- Corticosteroids for oral use
- Hydrocortisone Cremes & Lotions for Topical use

Let us know your Dermatological Requirements.

Send For Our Latest Dermatological Therapeutic Index

When in New York, Visit Our New Plant for an Escorted Tour through our Modern Laboratories

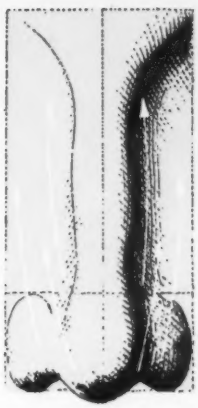
DOME CHEMICALS INC.
125 WEST END AVE. NEW YORK 23, N. Y.

penetrating

NOSE-OPENER

BIOMYDRIN®

nasal spray
drops



speeds medication to the site of irritation

penetrates, causing prompt dispersion of mucoid secretions. This deep infiltration allows all therapeutic agents to remain active for prolonged periods.

spreads almost instantly.

clears the air passages.

decongests without causing rebound congestion.

controls the allergic component.

combats infections.

safe—no pediatric dosage form is needed.

WARNER CHILCOTT

MORRIS PLAINS, N. J.

Thonzonium bromide 0.05%
Neomycin sulfate 0.1%
Gramicidin 0.005%
Thonzylamine HCl 1.0%
Phenylephrine HCl 0.25%
15 ml. atomizer or dropper bottle.

Also, **Biomydrin® F nasal spray** with hydrocortisone alcohol 0.02%—useful in the most stubborn cases of edema and inflammation. 15 ml. atomizer.

*1. Borrus, J. C.: J.A.M.A. 157:15[illegible]ril 30, 1[illegible]2. Selli[illegible] S.: J.A.M.A. 157:1594, April 30, 1955. 3. Lemere, F.: [illegible]rthwest Med.[illegible]098, Oct.[illegible]5. 4. Bena[illegible] B. and [illegible]ocutti, C.: Lav. neuropsichiat. 18:693, 1[illegible]5. Sellin[illegible]S.: J. Clin[illegible] Exper. Psy[illegible]th. 17:7[illegible] March 1956. 6. Berglund, M., Blumenthal, B[illegible]Tlordh, P.:[illegible]nska läk. 5[illegible]:3362, Dec.[illegible] 1956. 7.[illegible]el, H. A., Wood, J. A. and Dixon, H. H.:[illegible]ew York Aca[illegible]c. 67:780, May 9, 1957. [illegible] Hollister[illegible]E., Elkins, H., Hiler, E. G. and St. Pierr[illegible] Ann. New Yo[illegible] Acad. Sc. 67:789, May 9,[illegible]957. 9. G[illegible]: Rass. med. 34:233, July-Aug[illegible]957. 10[illegible]ii, R. et al[illegible] J. Pediat. Praxis 20:27,[illegible]g. 1957.[illegible]Viklund, P[illegible]: Anaesthesist[illegible]07, Aug[illegible]7. 12. Tucker, W. I.: Sout[illegible]. J. 50:1111, Sept. 195[illegible]3. Rolandi[illegible]: Attual. ostet.[illegible]3(6):[illegible]69, Nov.-Dec. 1957. 14.[illegible]ecker, W.: Klin. Mon[illegible]1. Augenh[illegible]2):224, 1958. 15.[illegible]hebianco, G. and Ceroni, T.: Oto-[illegible]ring. ital. 26(2):143, 1958. 16.[illegible]o, G.: Minen[illegible]49:1914, 1958. 17.[illegible]tuso, R. and[illegible]tti, F.: A[illegible]eurol. 3(1):36, J[illegible]1958. 18.[illegible]Gazz. med. ital.[illegible]:49, Feb. 1[illegible]Dastur, R.[illegible]: J. Indian M. Prof[illegible]13, Feb. 1958.[illegible]st, W.: Therap.[illegible]97:66, Fe[illegible]21. Be[illegible]P.: Lyon méd. 19[illegible] March 2, 1958.[illegible]miglia, G.: Mine[illegible]10:218, M[illegible]15, 1958.[illegible]dlander, H. S.:[illegible] Cardiol. 1:395, M[illegible]1958. 24. McCle[illegible]: Arch. Pe[illegible]75:101, M[illegible] 25. Sprauer, V. J.[illegible] Internat. Rec. Med.[illegible]& GP Clinics 171:[illegible]1958. 26.[illegible]binson, R.[illegible] Robinson, H. M.,[illegible]r.: South. M. J. 51:[illegible]09, April 1958. 27.[illegible], S. and Fe[illegible]er, L.: N[illegible]ed. 58:1285, April[illegible]5, 1958. 28. Bouquerel, J., Naviau and[illegible]ne: Ann. méd.[illegible]sychol. 116[illegible]ne 1958. 29. Reboul, E., Reboul, M. and Dorgeuille, C.: Maroc[illegible]37:784, July 1958. 30. B[illegible] Lyon méd. 200:885, Nov. 1958. 31. Lamphier, T. A.: Maryland M[illegible]7:627, Nov. 1958. 32. Leuke[illegible] Med. Klin. 53:2113, Dec. 1958.

70-95%*

of nervous, tense patients recovered or improved

For your patients, Miltown promptly checks emotional and muscular tension. Thus, you will make it easier for them to lead a normal family life and to carry on their usual work.

For you, the choice of Miltown as the tranquilizer means the comfortable assurance that it will relieve nervousness and tension without impairing your patient's mental efficiency, motor control, normal behavior or autonomic balance.

meprobamate (Wallace)

Miltown®

Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets; bottles of 50.

WALLACE LABORATORIES, *New Brunswick, N. J.*

CM-9304